THE DISTRIBUTION OF THE OCEANIC FISH *BRAMA BRAMA*

GILES W. MEAD AND RICHARD L. HAEDRICH

INTRODUCTION

This study is chiefly an analysis of the distribution and seasonal migration of *Brama brama* and, to a lesser extent, of *B. japonica*. These are relatively large mesopelagic fishes of temperate and subartic waters, the habits of which are largely unknown except for the published and original data summarized here. The genus also includes several tropical species, which will not be considered. *Brama* as a whole will be treated in a later paper together with *Taractes*, *Taractichthys*, *Eumegistus*, *Pteraclis*, and *Pterycombus*, the six genera forming the family Bramidae.

Although *Brama brama* occurs in the Southern Hemisphere, our study is restricted to the North Atlantic population. Data on adult distribution has been taken from many published records, and from the commercial fishery statistics of Spain, where the species is landed in noticeable quantity. The monthly occurrence or abundance of these adults has been correlated with the approximate position of the 10°C (50°F) isotherm; and the 10°C isothere virtually limits the northernmost occurrence, as shown by all records combined. Spawning area has been estimated from an analysis of larval distribution, an investigation based largely on the plankton collections of the "Dana" expeditions. Spawning, as reflected by the distribution of the larvae, occurs in waters warmer than about 20°C (68°F).

During recent years an interest in the distribution, abundance, and possible commercial importance of the Pacific *Brama japonica* has developed. Exploratory gill-net surveys in the Gulf of Alaska were conducted by the U.S. Bureau of Commercial Fisheries, and these confirmed earlier reports that large numbers of *B. japonica* were seasonally and sporadically present there. A distributional study has been completed by Charles R. Hitz and Robert French of the U.S. Bureau of Fisheries, Seattle, Washington and is now in press. The information assembled by these authors and our Atlantic data were the subjects of personal discussions, and similarities between the habits of *Brama brama* and *B. japonica* suggested that features shown by one species might profitably be sought in the other. For example, *Brama brama* forms commercially significant concentrations in the eastern Atlantic, which we believe to be due to temperature-controlled seasonal migratory habits. Temperature may influence the movements and concentration of *B. japonica* in a similar way.

We will consider our Atlantic material first and follow with comparative notes on the Pacific species.

THE CENTER OF AVAILABILITY: NORTHWESTERN SPAIN

Although bramids are landed as food fishes throughout the world, only off the west coast of the Iberian Peninsula does any species form the center of a fishery. In the principal area off northwestern Spain, there may be over a hundred vessels, each about 25 meters long, operating during the height

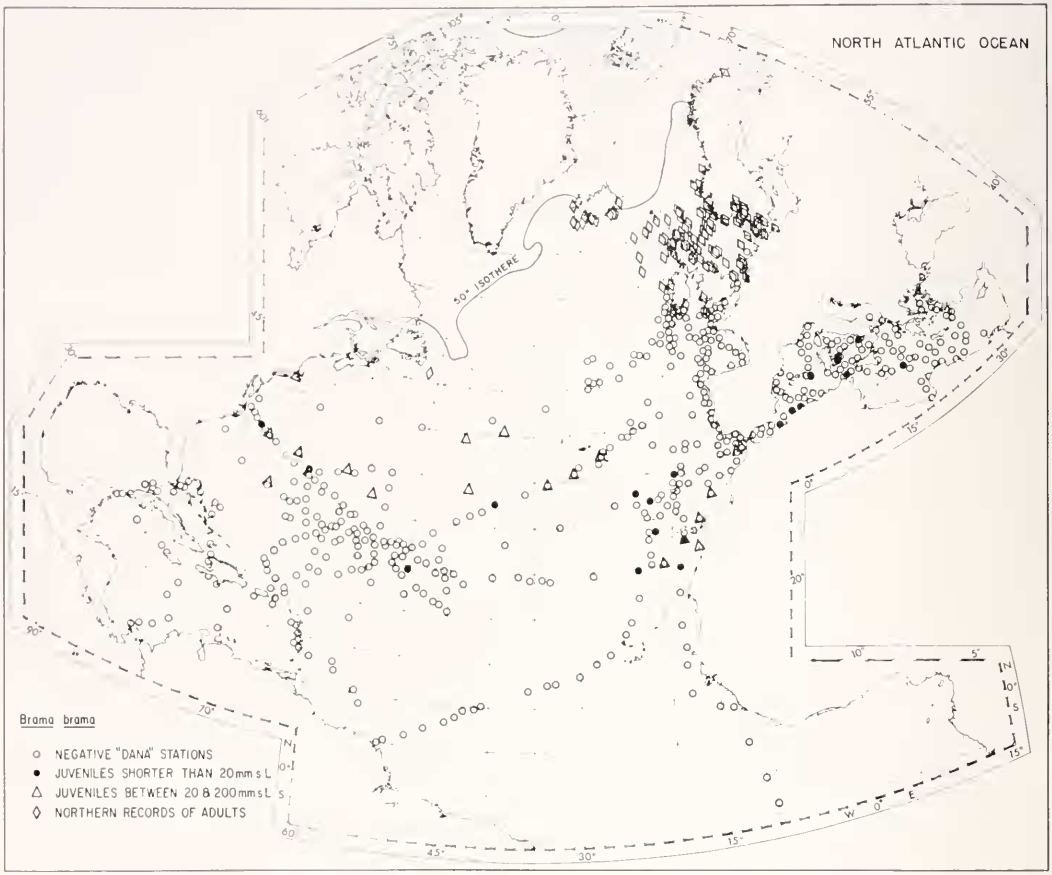

Figure 1. The distribution of the "Dana" stations in the North Atlantic and the known distribution of juvenile and adult *Brama brama*. The 50°F (10°C) isothere is taken from Hutchins and Scharff (1947).

of the season.[1] Each vessel sets and hauls about six miles of longline daily, a line similar to that universally used for tuna, but of lighter construction and with more numerous and smaller hooks. About seven thousand hooks comprise a set, which is made at about 50–60 fathoms (91–110 meters) in water over 250 fathoms (457 meters) deep. Catch rates frequently reach the phenomenal values of 60 or 70 fish per hundred hooks. The fish can also be simply and plentifully caught by jigging. The principal fishery, a winter one, lies west of the Cies Islands, and contributes about two per cent to the total Spanish fishery landings (Table 1). During the summer the fishery is centered further north, the vessels operating from La Coruña and Santander; during the early winter it extends south to the offings of Portugal. Further discussion of the fishery and the commercial use of *Brama* here and elsewhere is deferred. It is sufficient to note that this high-seas mesopelagic species congregates off

[1] Our information of the Spanish fishery was largely provided by Dr. B. Andreu and his associates in the Instituto de Investigaciones Pesqueras, Vigo, Spain, to whom we record here our grateful appreciation.

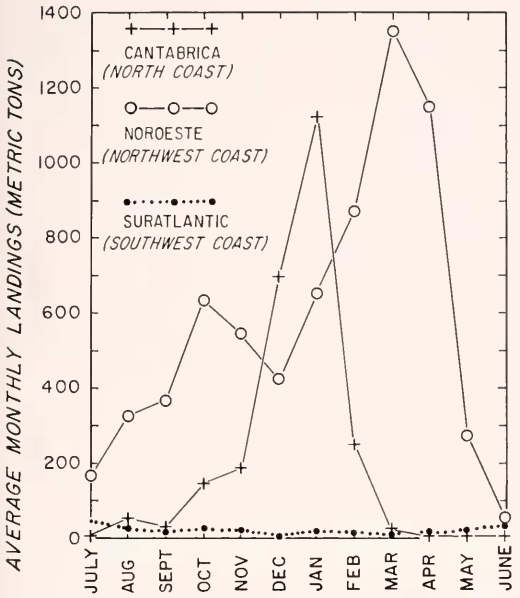

Figure 2. Ten-year average monthly landings of *Brama brama* in three Spanish coastal areas. Data from official Spanish fishery statistics (Ananymous, 1946).

Spain, and that landings data, using ten-year monthly means (Figure 2), show this congregation to be highly seasonal and at a maximum off the northwest coast during March and April when surface water temperatures are at their lowest. The gonads of the individuals which form this aggregation may be nearly mature, but the widespread occurrence of larvae in the eastern Atlantic and Mediterranean (Figure 1) south of, but not off, northwestern Spain suggests that the Spanish concentration is not a spawning aggregation. Other high-seas mesopelagic teleosts are caught incidentally on these winter longlines—fishes such as *Scombrolabrax*, *Gempylus*, *Lampris*, *Trachypterus*, and two additional bramids, *Pterycombus brama* and *Taractes asper* (= *T. raschi*).

DISTRIBUTION IN HIGHER LATITUDES

We consider next the distribution of adult *Brama* in waters which are of suitable temperature during a part of the year only. All known records except one are from the eastern Atlantic; the exception is a single cap-

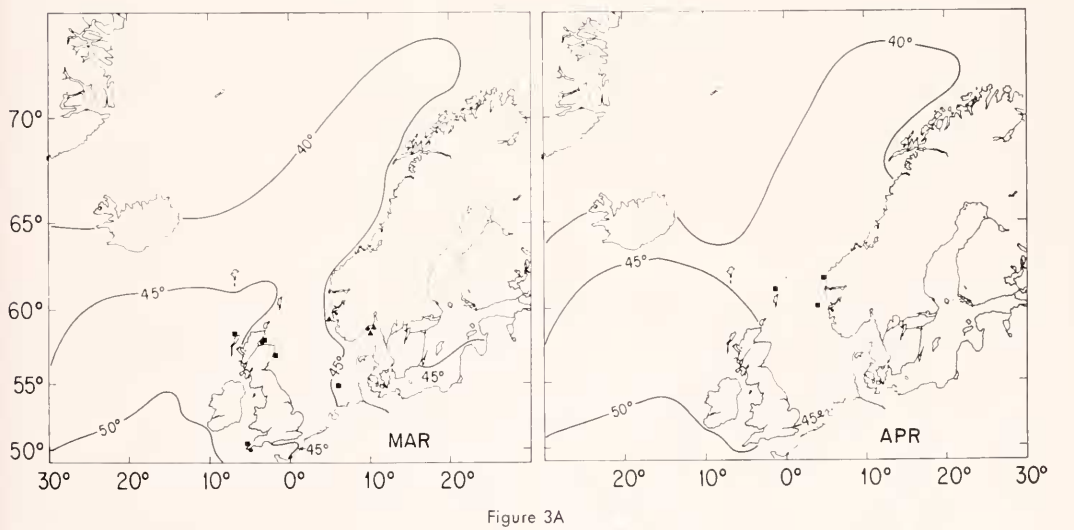

Figure 3A

Figure 3 A–F. Northern occurrence, by month, of adult *Brama brama*. ▣ Live captures. ● Strandings. ▲ Circumstances unknown. Distributional data from Table 2; surface Isotherms (°F) from the U.S. Navy Hydrographic Office Atlas of Sea Surface Temperatures (Ananymous, 1948).

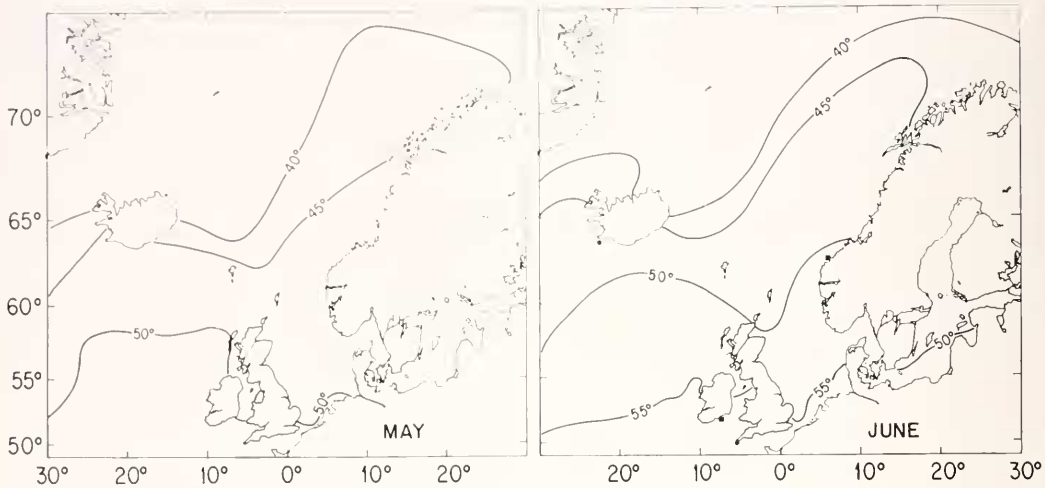

Figure 3B

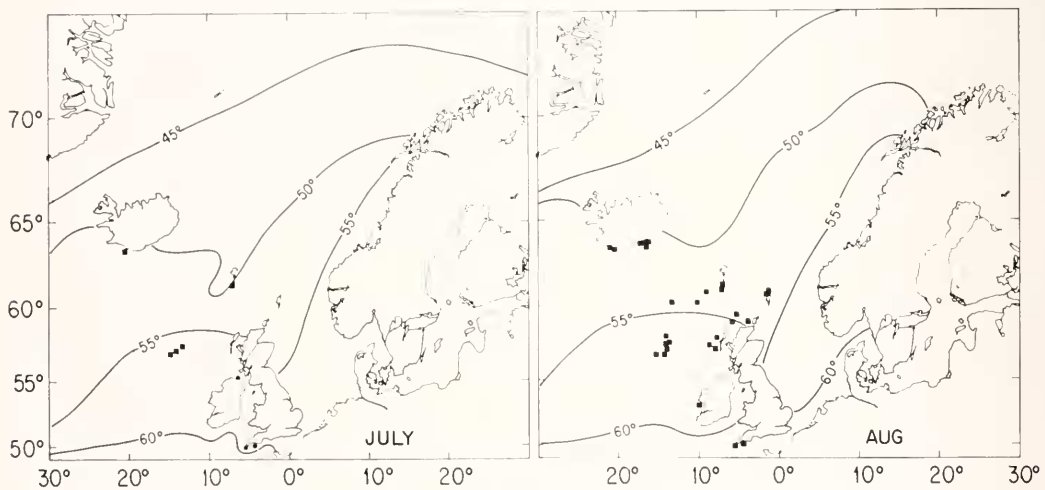

Figure 3C

ture made by a trawler on the Grand Banks off Newfoundland nearly a hundred years ago. In the eastern Atlantic, the species is exceedingly common in the Bay of Biscay. North of about 48° N the species is clearly a seasonal visitor and has been reported as such many times. These records, exclusive of some which seemed questionable and others which appeared to be duplicate accounts of the same specimen, are given in Table 2 and plotted in Figure 1. Also shown is the 50° F (10° C) isothere, north of which the surface waters are always colder than this (Hutchins and Scharff, 1947). This line appears to delimit the northward extent of all records except a single report from Murmansk.

Just as there are good and bad *Brama* years in the commercial fisheries of the south, there are years of numerous, and of few, reports to the north. During certain years, for example 1928 and 1949, the species

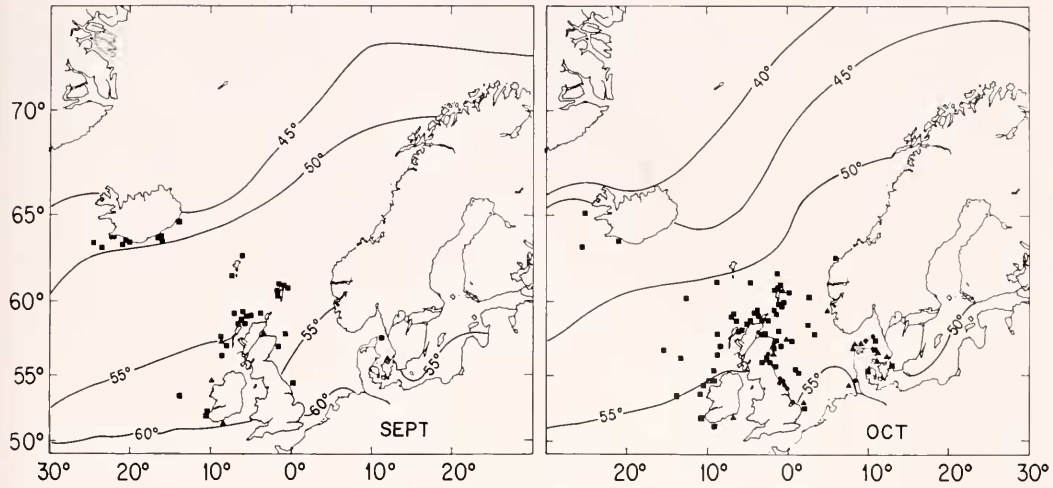

Figure 3D

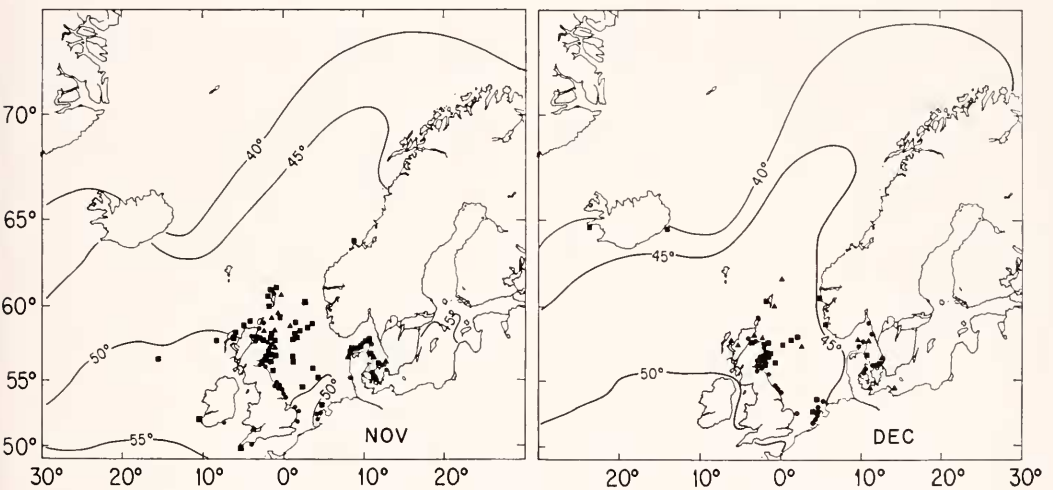

Figure 3E

was most abundant. Given these immense annual fluctuations, the unequal seasonal and geographic nature of fishing effort, of beachcombing, and of reporting, and the known climatic and related faunal changes which have taken place during the time span here considered, it may seem improper to dissect these data further, and we do so with a respect for these limitations.

The northern records (Table 2) are divided between live-captures and strandings, the latter term understood to include conditions of capture such as "nearly dead and awash in the surf" and "found floating dead at the surface." The reasons proposed for such strandings have been many and varied, e.g., the inability of a fish to determine the depth of the water, navigational difficulties similar to those which seem to beset the Cetacea from time to time, discomfort due to parasitism, etc. Such causes are unlikely, for strandiings are seasonal and occur most

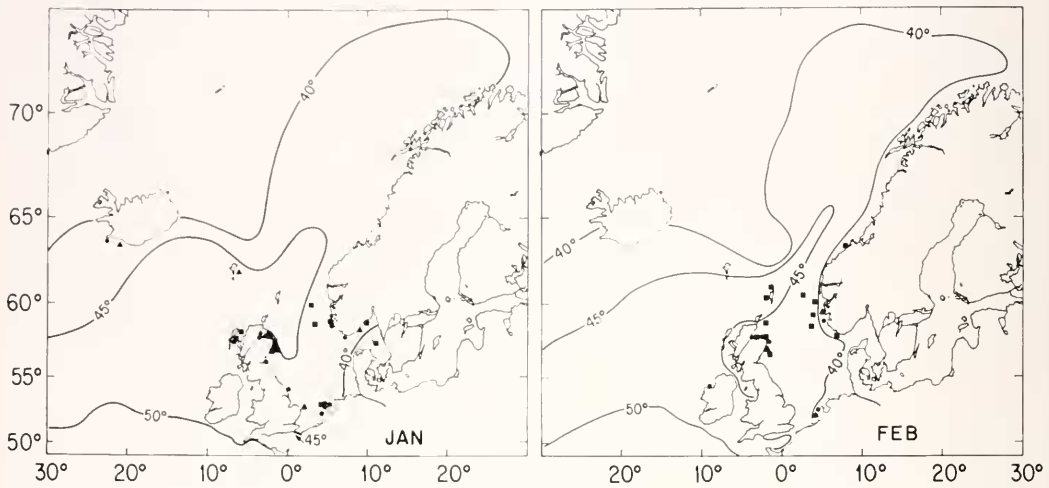

Figure 3F

frequently not in the southern waters in which *Brama* abounds, but in northern areas where it is less abundant. In accord with the conclusion of Kristensen (*in* Verwey, 1958: 544) and others, such strandings should be considered to be the result of low water temperatures aided, on occasion, by storms. These records were allocated to the calendar months, and the monthly records, together with the sea surface isotherms at 5°F intervals, were plotted on a series of charts (Figure 3).

During the winter and spring months the number of *Brama* apparently present in the north declines steadily. No specimen has ever been reported during May, and the reports for April and June are exceedingly few. This decrease probably represents the demise of the population which began its northward migration with the northward advance of warm surface water during April of the previous year. During June and July the surface waters in the north warm to 50–55°F (10–12.8°C) and higher, temperatures amenable to *Brama*, and following this warming come the fish. The August records are numerous and almost exclusively live-caught individuals. In September and October the critical isotherms begin their retreat southward. Reflecting this is the reduction of *Brama* catches in Iceland and the increased concentration off Scotland and in the North Sea. During November and December the 50–55°F (10–12.8°C) water is no longer in the area and many *Brama* moving south but finding themselves in the North Sea rather than to the west of Scotland, are effectively trapped in this sea and the Danish Sound. Evidence of this distress is the high number of strandings relative to the number of live-caught individuals—evidence shown graphically in Figure 4.

TEMPERATURE AND DISTRIBUTION

A correlation between a physical and biological factor needs imply no direct causal relationship, but such correlations are nonetheless instructive. We must, however, enter an apology. We have used, in what may appear to be an indiscriminate fashion, temperature values both in degrees Fahrenheit and Centigrade. We would have preferred to use degrees Centigrade exclusively, and all original data have been so converted when necessary. But we have used two basic hydrographic works which present generalized temperature curves: Fuglister's paper (1954) on the average temperature at

a depth of 200 meters in the Atlantic, which summarizes over forty thousand observations and is presented in degrees Centigrade; and the "Atlas of Sea Surface Temperatures" (Anonymous, 1948), a summary of hundreds of thousands of temperature observations, which is presented in degrees Fahrenheit. Hutchins and Scharff (1947) compiled their most useful "isotheres" and "isocrymes" from this atlas; hence these curves too are in degrees Fahrenheit. Interpolation between curves would be unwise. We have chosen to use the curves closest to one another in temperature, identifying each, and hoping that the discrepancy so produced will not be too destructive to our description.

Although listed as a commercial species throughout the eastern North Atlantic, the magnitude of the catch of *Brama* reaches significant proportions only off the northwestern coasts of Spain and northern Portugal (see above). A study of conditions off northwestern Spain has suggested that fish concentration is related to temperature, although both the physical and the biological data are inadequate.

The temperature-controlled distribution of *Brama* may be as follows: The adult fish seem to prefer water with temperatures higher than 55°F (12.8°C), seek water of such temperature at depths from the surface to about 500 meters, and cannot live indefinitely in waters below 50°F (10°C). (The depths of capture reported for the southern catches are in general much deeper than those to the north: the "tropical submergence" of authors and an expected phenomenon.) A part of the oceanic *Brama* population will expand into the North Atlantic as seasonal warming of the upper layers permits. But during the coldest months (in terms of sea-surface temperature) the range will be restricted, if not sharply limited, by a "thermal curtain" separating water colder than *ca.* 55°F (12.8°C) to the north from the warmer waters to the south.

The greatest catch of *Brama brama* is

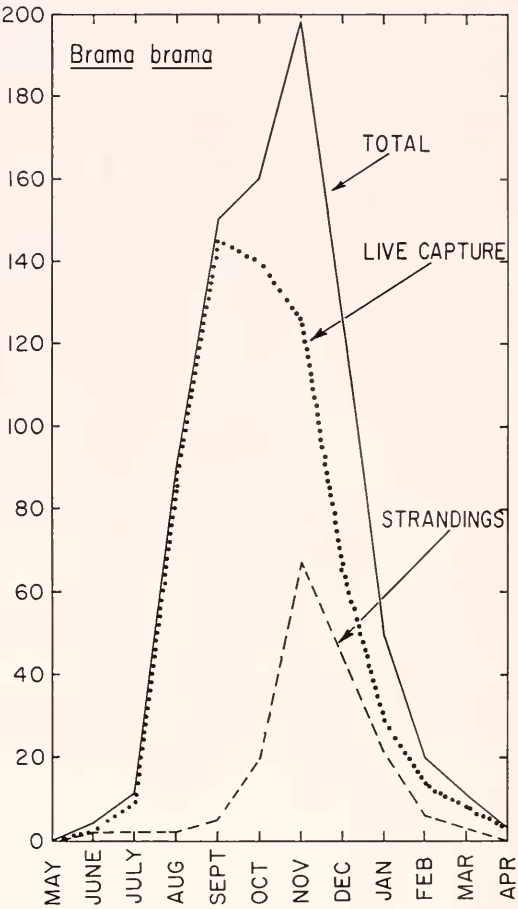

Figure 4. Number of records, from Great Britain northword, of *Brama brama*, by month.

that taken in the area between 41° and 43°N at about 9°W. The most productive month is March (Figure 2), with large but lesser catches during adjacent months. The temperature at a depth of 200 meters is thought not to fluctuate seasonally to any significant extent, and the 200 meter 53.6°F isotherm (12°C, the isotherm nearest our 55°F, or 12.8°C, supposed barrier value) reaches the coast near Vigo (see Figure 5). North of this line *Brama* would be restricted to water less than 200 meters deep throughout the year. Not far north of this, during March, the surface waters become colder

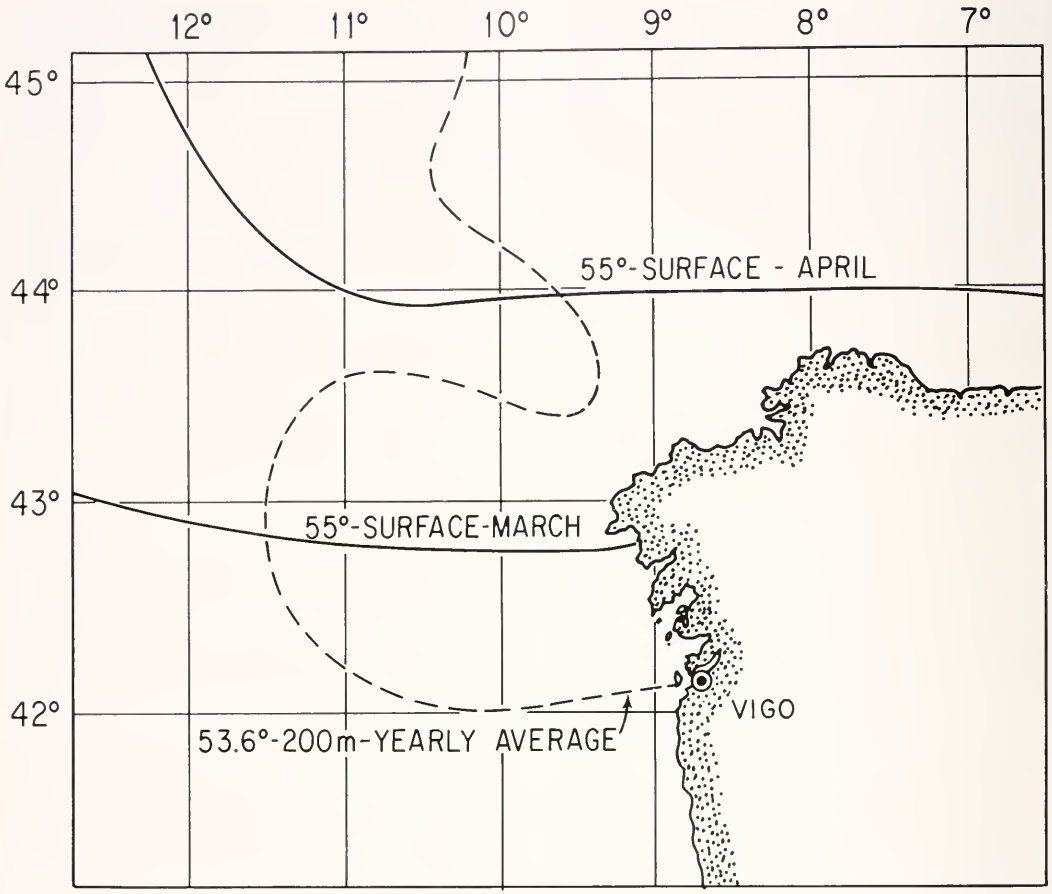

Figure 5. Surface and 200 meter isotherms off northwestern Spain during March and April. Data from Fuglister (1954) and Anonymous (1948).

than 55°F. (The 55°F surface isotherms for March and April are also shown in Figure 5.) Thus, off the corner of Spain there is an east-west temperature barrier, the top of which fluctuates during the winter months (January through March), but does not allow these fish to round Cape Finesterre until April. The bottom of the screen remains stationary, off Vigo, restricting *Brama* to a shallow stratum and preventing the northward escape of the population until the top of the barrier moves northward in April.

An unexpected and unexplained phenomenon converts this screen into a most efficient trap, which could prevent a temperature-sensitive population heading northward along the coast from changing to any direction save to that from which it came. This can be seen in the three one-degree squares labeled A, B, and C in Figure 6. The month of interest is again March, that of lowest water temperature and greatest *Brama* landings. Square A and that below it contain the fishery. The depth-temperature profile in square A shows that the water column above about 150 meters is nearly uniform in temperature and above 55°F. In

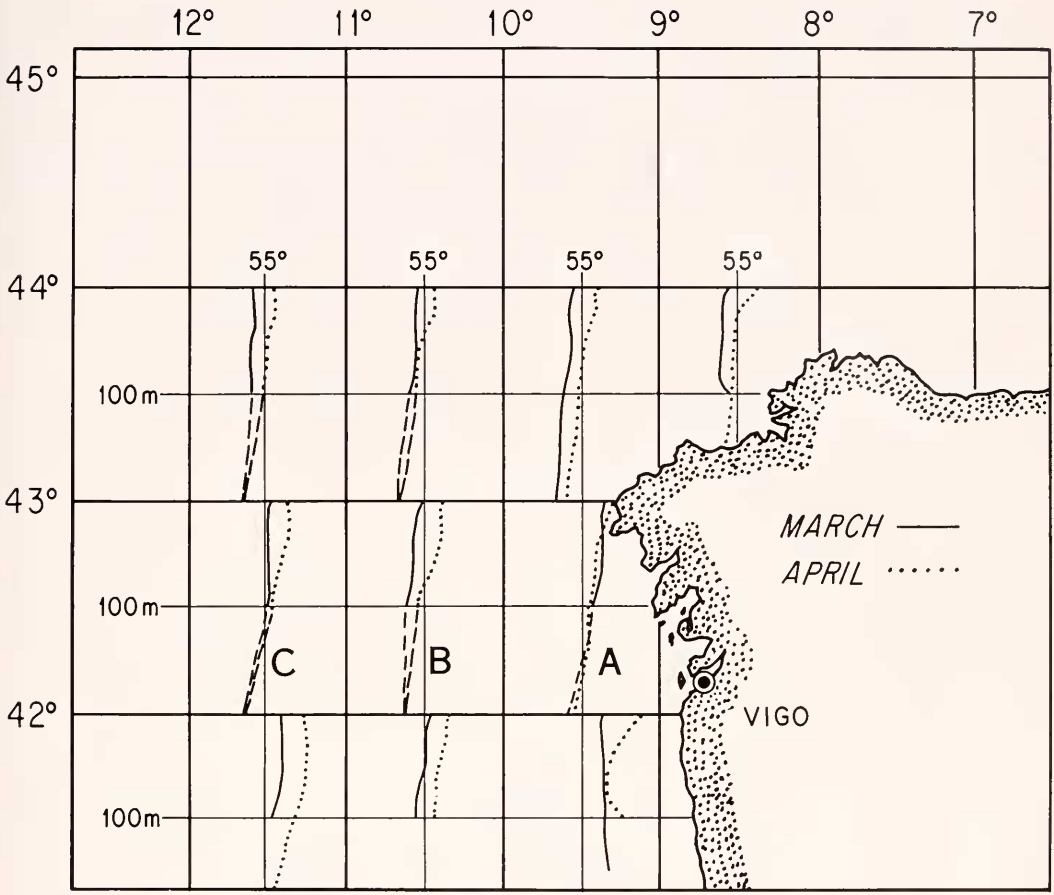

Figure 6. Depth-temperature profiles, March and April, for one-degree squares off northeastern Spain. Broken lines are extrapolations from 100–200 meters, based on 200 meter temperatures (Fuglister, 1954).

square B, the next offshore, this water column is below 55°F in March for all or most of its height—waters which we think are unsuitable for *Brama*. In square C, the next seaward, the water is again amenable to our fishes. Thus that part of the *Brama* population migrating northward along the coast, if limited in distribution by temperature, will be limited to the north *and west* and will be restricted bathymetrically as well. Such a population can do nothing save retreat southward or congregate, to await the later warming of the surface waters and immediate predation by the fishing fleet.

While it is tempting to continue this line of study to account for the abundance of *Brama* off the north coast of Spain in December and January, we will desist; the data are even poorer than those available for the northwest area and the discussion even of this area is based on elusive and incomplete data, generalized temperature curves, poor knowledge of the times and greatest abundance of fish, effect on apparent abundance of variations in fishing effort, complete ignorance of localized hydrographic peculiarities, etc. Nonetheless, the existence of a water column most of which is above 55°F (12.8°C) and the

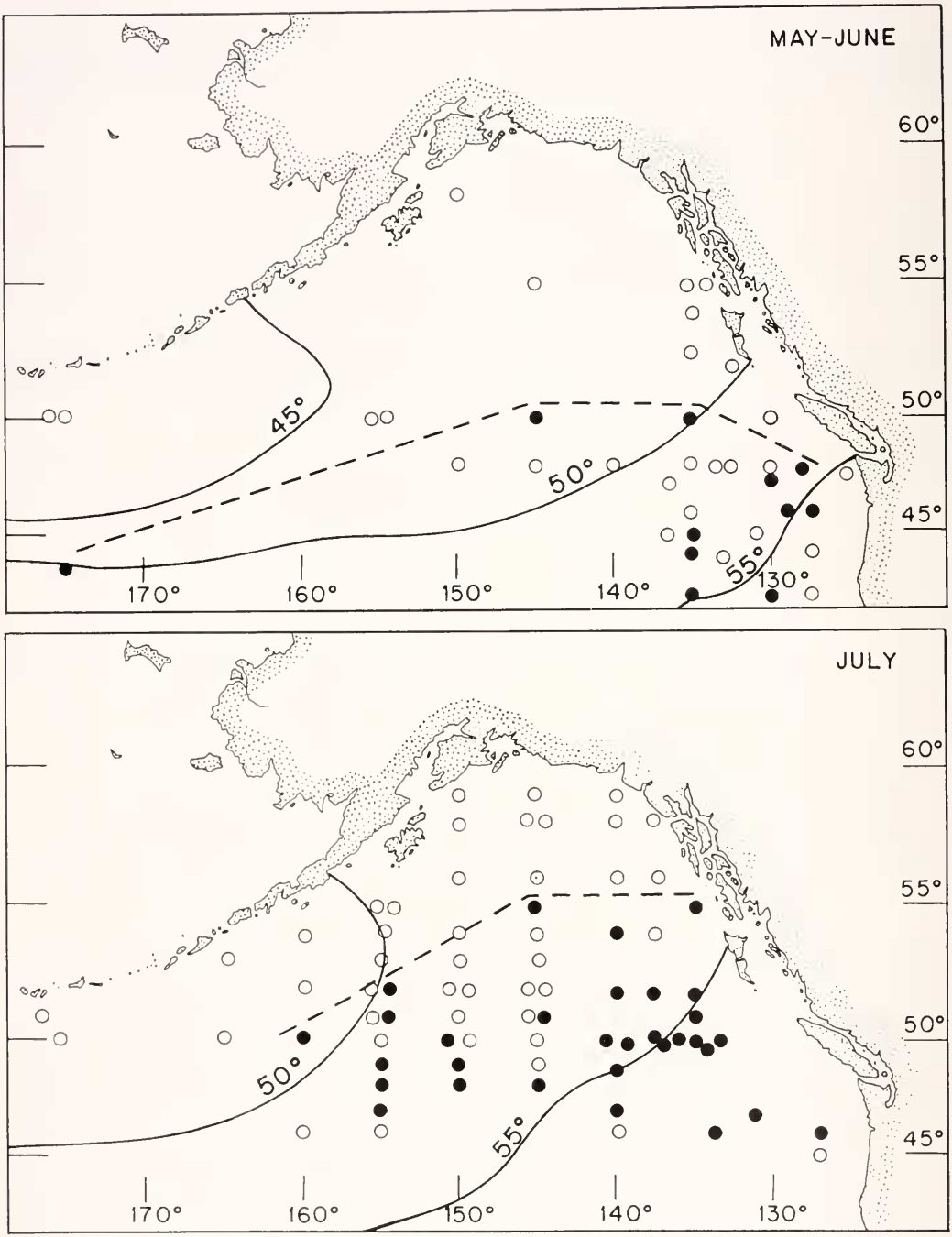

Figure 7. Seasonal northward progression of adult *Brama japonica* and surface isotherms in the northeastern Pacific. ○ Negative gill-net stations. ● Positive gill-net stations. Data from the exploratory fishing activities of the Canadian and United States Governments. Modified from Neave and Hanavan (1960: 227), with surface isotherms added from the Scripps Atlas (Anonymous, 1948).

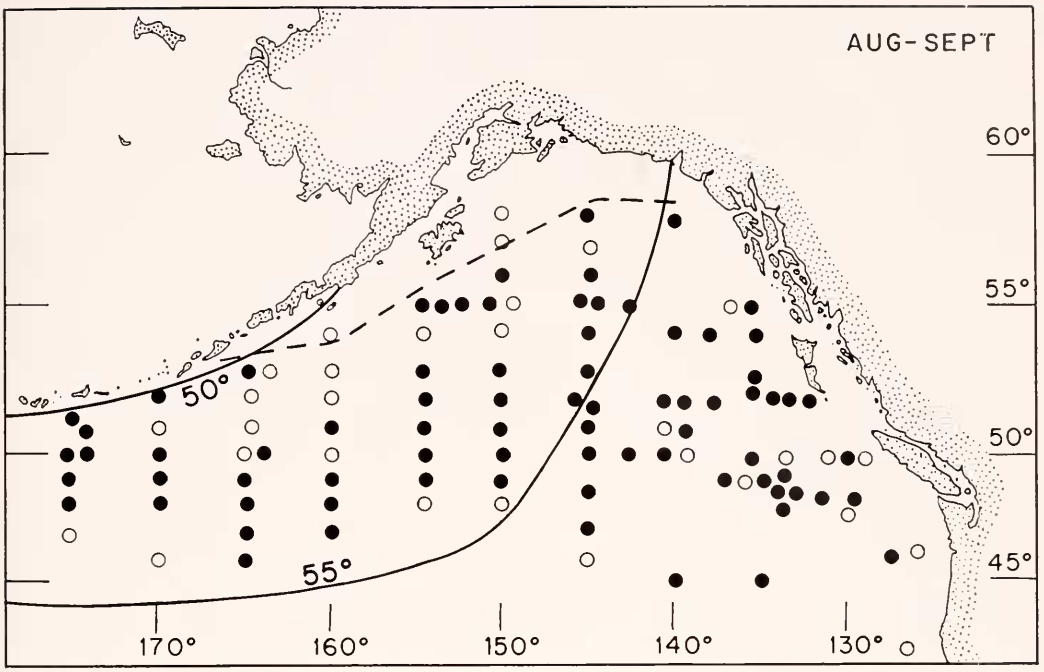

Figure 7 continued

restricting influence of the seasonally-fluctuating 55°F surface isotherm are compatible with the concentration of these fish along the Spanish coast in the area off Vigo.

DISTRIBUTION OF ADULT BRAMA JAPONICA

The distribution of the North Pacific *Brama japonica* between California and the Aleutian Islands has been reviewed by Hitz and French (in press, *B. brama* of their terminology). Young specimens have been caught off northern Mexico (unpublished records) and a single catch was made by a commercial trawler in the Bering Sea (this specimen is now in the U.S. National Museum). Young specimens caught during the cruises of the California Cooperative Oceanic Fisheries Investigations suggest a spawning area extending along the coast at least from 25° to 33°N, although this and other material from the North Pacific is still under study. In contrast to the northern distributional data for the Atlantic *Brama brama*, which required a literature review *ad nauseam* (Table 2), data on the seasonal distribution and abundance of *B. japonica* come as a convenient by-product of the high seas gill-net salmon surveys of recent years (Powell, Alverson, and Livingstone, 1952; Powell and Peterson, 1957; Hanavan and Tanonaka, 1959). These are the data on which the discussions of Neave and Hanavan (1960) and Hitz and French (in press) are chiefly based.

There are two ways in which the relationship between this fish and temperature has been studied. One is that used in the analysis of our Atlantic *Brama brama* data—the comparison of monthly fish distribution and surface temperature structure. This is the approach used by Neave and Hanavan (1960), who report the minimum and maximum temperatures, 9.5°C (49.1°F) and 17°C (62.6°F), at which *B. japonica* has been taken in the Gulf of Alaska, and (p.

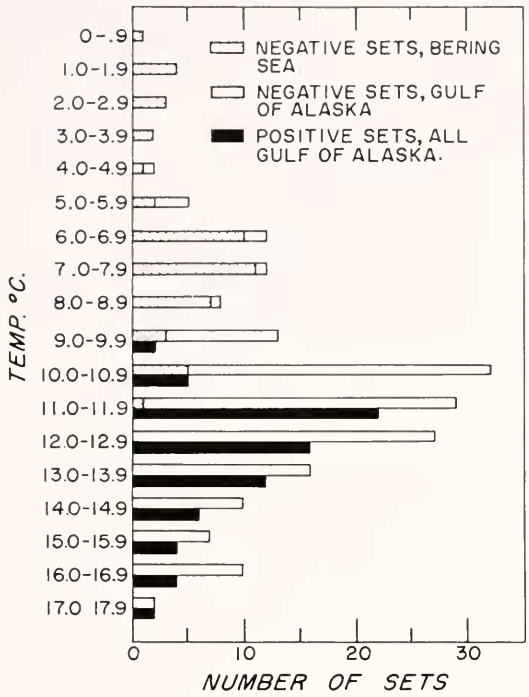

Figure 8. Temperature and the capture of *Brama japonica* in gill-net sets in the Gulf of Alaska. Data from Hanavan and Tanonaka (1959).

229) plot the captures by period (May–June, July, and August–September). Their charts, to which we have added surface isotherms and otherwise modified, are reproduced here (Figure 7). A seasonal northward progression, correlated with the identical isotherms seen to control the spread of *B. brama* in the North Atlantic, is indicated. The 50°F (10°C) August–September isotherm coincides with the 50°F isothere and with the Aleutian arc. There is but a single recorded instance of an Atlantic *Brama brama* from north of this isothere, and there is but a single record of *B. japonica* from north of this line in the Pacific.

Temperature preference can also be inferred from apparent abundance as reflected in catch data. Number of stations, negative and positive, for *Brama japonica* were plotted against temperature, converted to degrees Centigrade, in Figure 8, using catch data reported by Hanavan and Tanonaka (1959). These data show highest catches to be in waters warmer than 11°C (51.8°F). Catch-per-shackle of gill-net gear similarly shows that good catches are most frequent between 11°C (51.8°F) and 15°C (59.0°F). Hitz and French (in press), however, note that this unit of effort is undesirable as mesh size, and thus fishing effectiveness, varied among the many sets. These authors thus prudently selected the "set" as the unit of fishing effort and found an apparent peak in relative abundance or availability in gill-net sets (their table 2) in waters of 12–13°C (53.6–55.4°F).

DISCUSSION

There are several indications of parallel, temperature-controlled phenomena in the two closely related species: the migrations into higher latitudes which begin in spring and follow the advance northward of the 50°–55°F (10°–12.8°C) isotherms; the virtual exclusion of all adults from waters north of the 10°C (50°F) isothere; and the more southern spawning ground. But without known Pacific counterpart is the winter congregation of adults off Spain, and we raise here the suggestion that such a congregation may occur. During the winter months, in waters bounded to the east by California and to the north by 10°–12°C surface isotherms, large numbers of *Brama japonica*, which have spawned further south, may be congregating in anticipation of the seasonal warming. Local upwelling may disrupt the situation, but an attempt to locate such congregations if they do occur is in order.

An analysis of the abundant hydrographic data to determine the contour of the 55°F (12.8°C) surface isotherm during the coldest months and the locality where the water column above but not below 150 meters exceeds 55°F would suggest an area in which these fish congregate. This area will be somewhere off central California, and experimental fishing there with a longline fashioned after that used in Spain might be rewarding.

ACKNOWLEDGMENTS

We wish to record our thanks here to the many who provided distributional data (Table 2); to Mrs. Julia Rolfe for bibliographic assistance; to Charles R. Hitz, G. E. Maul, and N. B. Marshall for reviewing the manuscript; and to the National Science Foundation for financial support through grant no. G15887 to Harvard University, which has supported the research on the Bramidae of which this paper is a part. The larval *Brama brama* referred to in this study are those in the "Dana" collections, Carlsberg Laboratory, Denmark. Those of *Brama japonica* were assembled by the California Cooperative Fishery Investigations, La Jolla, and were made available by Dr. E. H. Ahlstrom. We are especially indebted to Dr. B. Andreu of Vigo, Spain, for information on the natural history of *Brama* in that area.

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TABLE 1. SPANISH LANDINGS OF *Brama brama* FROM 1950 THROUGH 1959. Weight, and per cent of total Spanish *Brama* catch, by region; and total catch, with per cent of all fish landed contributed by *B. brama*, for all of Spain. Regions, which correspond to data-reporting units, as follows: Cantábrica: northern Atlantic coast, Bidasoa to Atalaya, including San Sebastian, Bilboa, Santander, etc.; Noroeste: northwestern Atlantic Atalaya to Porcia al Miño incl. La Coruña, Vigo, etc.; Suratlantic: southwestern Atlantic coast, Guadiara to Rio Guadiaro incl. Huelva, Sevilla, Cadiz, etc.; Surmediterránean: Rio Guadiaro to Cape Gata, incl. Estepona, Malaga, Almeria, etc.; Levante: Cape Gata to Cape Nao, incl. Cartegena, Alicante, etc.; Tremontana: Cape Nao to the French border, incl. Valencia, Castellon, Tarrogona, etc.; Balear: Balearic Ids.; Canaria: Canary Ids. Data from published Spanish fishery data (Anon., 1946 *et seq.*)

	YEAR	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Cantábrica	Metric tons	927.8	1705.9	1662.1	4566.3	3362.1	5848.7	3905.2	2886.5	273.0	71.8
	% Spanish *Brama* catch	16.53	32.38	21.44	36.62	28.61	44.69	30.58	25.07	4.43	0.91
Noroeste	Metric tons	4614.3	3507.4	5933.2	7522.2	8011.9	6796.7	8483.1	8145.6	5388.9	7343.2
	% total *Brama* catch	82.21	66.58	76.54	60.33	68.18	51.94	66.43	70.74	87.4	93.33
Suratlantic	Metric tons	30.8	9.6	39.6	304.2	332.6	383.9	350.6	450.1	428.2	411.9
	% total *Brama* catch	0.55	0.18	0.51	2.44	2.83	2.94	2.75	3.91	6.95	5.24
Surmediterránean	Metric tons	5.5	1.8	–	29.0	25.3	34.2	24.3	26.9	18.2	1.5
	% total *Brama* catch	0.10	0.03	–	0.23	0.21	0.26	0.19	0.23	0.30	0.02
Levante	Metric tons	5.4	3.3	3.3	8.9	5.6	8.2	0.9	2.7	34.5	3.6
	% total *Brama* catch	0.10	0.06	0.04	0.07	0.05	0.06	–	0.02	0.56	0.05
Tremontana	Metric tons	3.2	1.5	2.7	0.8	0.7	0.6	–	0.2	–	–
	% total *Brama* catch	0.05	0.03	0.04	0.01	0.01	–	–	–	–	–
Balear	Metric tons	3.7	0.1	0.1	–	–	–	–	–	0.2	–
	% total *Brama* catch	0.06	–	–	–	–	–	–	–	–	–
Canaria	Metric tons	22.4	39.0	110.6	36.8	13.2	14.7	6.5	3.0	22.3	35.6
	% total *Brama* catch	0.40	0.74	1.43	0.30	0.11	0.11	0.05	0.03	0.36	0.45
Spanish totals	Metric tons (rounded off)	5613	5269	7752	12468	11751	13087	12771	11515	6165	7868
	% all fish landings	1.24	1.11	1.72	2.66	2.50	2.34	2.30	1.98	1.01	1.23

Table 2. The known records of capture, through 1961, of adult *Brama brama* in the western Atlantic and in the eastern North Atlantic north of the Bay of Biscay. (t.l. = total length; f.l. = fork length; s.l. = standard length)

JANUARY

Date	No. (and sex)	Length (cms)	Locality	Circumstances	Authority and Remarks
I 39	1		Vestmannaeyjar, Iceland		Saemundsson, 1949: 18
15 I 14	1	43 t.l.	Grindavik, S.W. coast Iceland	Stranded alive	Saemundsson, 1922: 180
23 I 1850	1	39.5 s.l.	Faroes		Nielsen, 1961, pers. comm.
I 50	1	46	Mouth of Zolotoi River, 100 km. E. of Kolskii Inlet, Murmansk, U.S.S.R.	Stranded dead	Andriashev, 1954: 215, citing I. I. Larunov in "Polyarnaya Pravda."
8 I 50	1	52 t.l.	Austevik, Avaldsnes, Karmøy, Norway	On the shore	Holgersen, 1950: 89
5 I 50	1	58.5 t.l.	Skjoldastraumen, Skjold, N. Ryfylke, Rogaland, Norway	Fishing line (jig)	"
19 I 52	1	53 (t.l.?)	Klepp, Reve, Rogaland, Norway	On shore	"
7 I 57	1 ♂	54.5	3–4′ off Whitehills, Moray Firth	Seine	Rae and Lamont, 1959: 85; + details pers. comm.
16 I 57	1	53.0	Off Tolsta Head, Lewis	Drift net	"
31 I 56	1	53.5	Loch Ainort, Isle of Skye	Stranded	Rae and Wilson, 1958b: 96; + details pers. comm.
5 I 56	1 ♀	59.0	Pennan, Moray Firth	Scooped from the sea	"
7 I 53	5		Finkenwärder-allee (*ca.* 60°N., 3°E.)	Comm. landing	Kotthaus, 1954: 117
30 I 50	1 ♀	58.2	near Lath, Moray Firth	Stranded	Rae and Wilson, 1951: 83; + details pers. comm.
I 50	2		59°N. (200 m.)	Caught	Kristensen, 1950: 50
10 I 09	1	56	North Berwick beach, E. Lothian	Stranded	Ingles, 1909: 118
14 I 52	1		Snaresund, Aust-Agder, Norway		Willgohs, 1954: 4
I 53	1	51.5 t.l.	Langesundfjord, Telemark, Norway	Fishing line	"
28 I 53	1	59 t.l.	Fjeldskaar, Lindesnes, Vest-Agder, Norway	Found dead in shallow water	Willgohs, 1954: 4
I 56	1	47	58°40′N., 3°20′E.		Verwey, 1958: 542–3
18 I 28	1	56	Hirsholmene, Denmark	Caught	Jensen, 1940: 195–7
10 I 38	1 ♀	58.5	near Helmsdale, Moray Firth	Stranded	Rae and Lamont, 1962, pers. comm.
6 I 09	1		15′ S.E. Aberdeen	Caught	Thompson, 1918: 63–64; + details; Rae and Lamont, 1962, pers. comm.
15 I 10	1		4–5′ E.N.E. Aberdeen	"	"
11 I 11	1		9′ E.N.E. Aberdeen	"	"
12 I 11	1		14′ S.S.E. Aberdeen	"	"

12 I 11	1		7–8′ S.S.E. Tod Head, Kincardine	"	"
12 I 11	1		14′ S.E. Tod Head, Kincardine	"	Rae and Lamont, 1962, pers. comm.
16 I 11	1		16′ S. × E. Aberdeen	"	Thompson, 1918: 63–64; + details; Rae and Lamont, 1962, pers. comm.
19 I 11	1		12′ S.S.E. Aberdeen	"	"
20 I 11	1		25′ N. × E. Rattray Head, Aberdeen	"	"
20 I 11	1		6′ E. × S. ½ S. Aberdeen	"	"
14 I 11	1		7′ E. × N. Aberdeen	"	"
1 52	1	51–60	Dutch coast around Haarlem, Holland	Stranded	Verwey, 1953: 346–7
I 56	1	55	between Katwijk and Texel, Holland	Stranded	Verwey, 1958: 542–3
I 57	1	53	Scheveningen, Holland	Stranded	Verwey, 1960a: 548–9
I 58	1 ♂	53	Texel Hole, W. of Texel, Holland	Caught	Verwey, 1960b: 564–5
3 I 50	1	60	near Egmond, Holland	Stranded alive	Kristensen, 1950: 50
9 I 50	1	45	Texel, Holland	Stranded	"
10 I 50	1		Texel, Holland	Stranded alive	"
12 I 50	1	42	Texel, Holland	Stranded alive	"
12 I 50	1	48	near Scheveningen, Holland	Stranded alive	"
16 I 50	1 ♂	46.5	Texel, Holland	Stranded	"
18 I 50	1 ♂	56	near Huisduinen, Holland	Stranded	"
25 I 1847	1		near Great Yarmouth, Norfolk	Stranded (?)	Patterson, 1897: 548
17 I 28	1		near Flamborough Head, Yorks.	Brought up in the trawl; dead and decomposed	Clarke, 1928: 108

FEBRUARY

26 II 51	1	46.5 t.l.	Tustna, Nord-Møre, Norway	Fishing line	Willgohs, 1954: 4, citing Nordgård, 1928: 63–4
9 II 52	1	51 t.l.	Viste, Randaberg, Rogaland, Norway	On shore	Holgersen, 1959: 128; Willgohs, 1954: 4, citing Holgersen, 1950 and pers. comm.
1 II 56	2	54; 55	N. North Sea	Comm. landings	Kotthaus, 1958: 96
1 II 57	1		Heiastrandbukta, near Farsund, Norway	Mackerel net (3 fm)	Holgersen, 1959: 128
2 II 53	1	55	edge of Norwegian Deep, *ca.* 60°N.	Comm. landings	Kotthaus, 1954: 117
1 II 56	1 ♂	52.3	Peterhead, Aberdeen	Stranded	Rae and Wilson, 1958b: 96; + details pers. comm.
12 II 56	1 ♂	51.0	Whitehills, Moray Firth	Stranded	"
28 II 50	1 ♂	53.0	Gardenstown, Moray Firth	Salmon net	Rae and Wilson, 1951: 83; + details pers. comm.
14 II 53	1 ♀	55.5	11′ N.W. × W. Muckle Flugga, Shetland	Trawl	Rae and Wilson, 1954b: 117; 1954a: 178

(Continued on next page)

TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
8 II 50	1		Røvaer, Rogaland, Norway		Holgersen, 1950; + pers. comm. citing Willgohs, 1954: 4
II 56	1 ♂	50	58°40′N., 3°20′E.	Caught	Verwey, 1958: 542–3
22 II 53	1	54	Viking Bank	Trawl	Krefft, 1961, pers. comm.
II 50	1	43.5	59°20′N., 3°30′E.	Caught	Kristensen, 1950: 50
15 II 09	1		45′ E. × N. Wick, Caithness	Caught	Thompson, 1918: 63–4; Rae and Lamont, 1962, pers. comm.
22 II 09	1		11′ N.E. Foula, Shetland	Caught	"
20 II 15	1		40′ S.E. Aberdeen	Caught	"
II 56	1 ♀	51	between Katwijk and Texel, Holland	Stranded	Verwey, 1958: 542–3
12 II 50	1 ♀	40	near Wassenaar, Holland	Stranded (?)	Kristensen, 1950: 50
II 56	1		Mouth of R. Moy, Co. Mayo, Ireland	Washed ashore	Roche, 1956: 109
			MARCH		
13 III 56	1	54 (t.l.?)	Vågsfjorden, Norway		Holgersen, 1959: 128
28 III 56	1	50 (t.l.?)	W. of Veabygd, Karmøy, Norway		"
1 III 51	1		Larviksfjorden, Norway		"
1 III 50	1 ♂	45.0	near Cullen, Moray Firth	Salmon net	Rae and Wilson, 1951: 83; + details pers. comm.
4 III 50	1		near Langesund, Telemark, Norway	On the shore	Willgohs, 1954: 4
2 III 50	1	57 t.l.	Stråholmen, Langesund-Drev, Norway		Oslo Museum
2 III 09	1		between Flannans and Butt of Lewis	Caught	Thompson, 1918: 63–4; + details, Rae and Lamont, 1962, pers. comm.
1 III 11	1		10–12′ S.E. Aberdeen	Caught	"
III 50	1		55°N., 6°02′E.	Comm. trawler (43–45 m)	Krefft, 1961, pers. comm.
III 1891	1	50.8	Portscatho, Cornwall	Taken with a gaff	Clark, 1907: 426
12 III 05	1		near St. Anthony Lighthouse, Falmouth, Cornwall	Thrown up dead after violent storm	"
			APRIL		
IV 51	1	49 t.l.	Hennøystrand, Sogn og Fjordane, Norway	Caught by fishing net (70 m)	Willgohs, 1954: 4

9 IV 52	1		Muckle Flugga, Shetland	Comm. trawler (250 m)	Krefft, 1961, pers. comm.
8 IV 25	1	47	280′ N.E. Buchanness	Trawl	Rae and Lamont, 1962, pers. comm.
			JUNE		
VI 22	1	66 t.l.	Grindavik, S.W. coast of Iceland	Cast ashore dead	Saemundsson, 1927: 162
18 VI 51	1	39.5 t.l.	Tampen, *ca.* 143 kv/mil west of Rundøy, Norway	Caught	Zoological Museum, Univ. of Bergen
3 VI 1893	1		Dungarvon, Co. Waterford, Ireland	Caught	Crane, 1893: 230
12 VI 1875	1	"full-size"	Western Beach, Penzance, Cornwall	Floundering in shallow water; alive but exhausted	Cornish, 1875: 4542
			JULY		
15 VII 19		58	Vestmannø Rhed, Iceland	Taken alive	Saemundsson, 1922: 180
28 VII 59	1 ♀	59	7–8′ W. of Suderø, Faroes	Trawl	Rae and Lamont, 1961: 105; + details, 1962, pers. comm.
16 VII 24	1		20′ E.S.E. of Rockall	Longline	Rae and Lamont, 1962, pers. comm.
23 VII 24	1		115′ S.W. of Rockall	Longline	"
23 VII 25	1		100′ S.W. of Rockall	Longline	"
16 VII 26	1 ♀	59	100′ S.W. of Rockall	Caught	"
28 VII 27	1		56′ S.S.W. of Rockall	Caught	"
18 VII 57	2 (1 ♂ = 55.5)		George Bligh Bank	Longline	Rae and Lamont, 1959: 85; + details, 1962, pers. comm.
4 VII 1866	1		Looe, Cornwall	Washed ashore alive	Clogg, 1866: 349
10 VII 1874	1		near Penzance, Cornwall	Stranded nearly dead	Cornish, 1874: 4266
VII 1878	1	38	Portrush, Ireland	Found dead	Ogilby, 1885: 514–15
			AUGUST		
15 VIII 52	1		S.W. Syderø, Faroes	Trawl	Rae and Wilson, 1953b: 39; 1953a: 147
VIII 52	2 ♂	60.4	Faroe Bank	Longline	"
28 VIII 52	1		Skeidarardeep, Iceland	Comm. landings	Brandes, Kotthaus and Krefft, 1953: 47
25 VIII 53	1		Rose Garden, Iceland–Faroes Ridge	Comm. landings	Brandes, Kotthaus and Krefft, 1954: 44
VIII 51	1	54.5	25′ S. of Munken Rock, Faroes	Longline	Rae and Wilson, 1952b: 56; 1952a: 107
15 VIII 19	1	58 t.l.	Vestmannø Rhed, Iceland	Caught living (trawl?)	Saemundsson, 1922: 180

(Continued on next page)

TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
21 VIII 53	28		Vestmannaeyja, Iceland, 21°W.	Comm. landings	Brandes, Kotthaus and Krefft, 1954: 44
27 VIII 51	1		Ingolfshöfdi, Iceland	Comm. landings	Brandes, Kotthaus and Krefft, 1953: 47
28 VIII 51	1		Ingolfshöfdi, Iceland	Comm. landings	"
10 VIII 54	1	57	Sido Ground	Comm. landings	Brandes, Kotthaus and Krefft, 1956: 30
15 VIII 54	1	54.5	Skafta Deep, Iceland	Comm. landings	"
13 VIII 27	3		35′ S. of Sumbo Lt., Faroes		Rae and Lamont, 1962, pers. comm.
30 VIII 27	2		S.E. corner Faroe Bank		"
4 VIII 24	1		70′ W.S.W. of Rockall	Caught	"
5 VIII 24	2		8′ S.W. of Rockall	Caught	"
14 VIII 24	1		115′ S.W. of Rockall	Caught	"
3 VIII 25	1		27′ N.N.W. of Rockall	Caught	"
11 VIII 26	3		25′ N.N.E. of St. Kilda	Caught	"
23 VIII 26	2		46′ N.W. × W. of Barra Head	Caught	"
31 VIII 26	1		25′ S.E. × ½ S. of Sula Sgeir (off N.W. Scotland)	Caught	"
3 VIII 27	1		50′ S.S.W. Rockall	Caught	"
27 VIII 28	1		Lousy Bank	Caught	"
27 VIII 49	1		40–45′ N.E. × N. ½ N. of North Rona	Longline	"
9 VIII 52	1	54	Muckle Flugga, Shetland	Trawl (250 m)	Krefft, 1961, pers. comm.
15 VIII 52	2 ♂	56.5	Bill Bailey's Bank	Longline	Rae and Wilson, 1953b: 39; 1953a: 147
8 VIII 50	2 ♂ 2 ♀	49.2; 53.5 51.5; 53.5	10–12′ W.N.W. of St. Kilda	Comm. long-liner	Rae and Wilson, 1951: 83; Rae and Lamont, 1962, pers. comm.
21 VIII 57	2		Lousy Bank	Longline	Rae and Lamont, 1959: 85; + details, 1962, pers. comm.
3 VIII 57	1		Lousy Bank	Longline	"
7 VIII 58	1	59.7	Rockall	Longline	Rae and Lamont, 1960: 78; + details, 1962, pers. comm.
8 VIII 55	4		Rockall Bank	Longline	Rae and Wilson, 1957: 103; 1956a: 100
27 VIII 59	1 ♂	54	Noup Deep, W. Orkney	Trawl	Rae and Lamont, 1961: 105; + details, 1962, pers. comm.
29 VIII 59	2		Muckle Flugga, Shetland	Trawl	"
VIII 1821	1	43	Looe, Cornwall	Live caught at surface	Couch, 1822: 78; 1849: xxvii–xxviii
VII–VIII 1886	1		Newlyn Harbour, Penzance, Cornwall	Captured by boathook through the eye, while swimming in pool	Cornish, 1886: 371

VIII 50	1	36	Polperro, Cornwall	Capture	Brandes, 1952: 39
3 VIII 60	1	58	George Bligh Bank	Longline	Rae and Lamont, 1962, pers. comm.
24 VIII 61	1 ♀	484 f.l.; 572 t.l.	North Sound of Galway Bay, Ireland	Trawl	Gibson, 1962: 15–17
24 VIII 61	1 ♀	459 f.l.; 565 t.l.	North Sound of Galway Bay, Ireland	Trawl	"
24 VIII 61	1 ♀	477 f.l.; 576 t.l.	North Sound of Galway Bay, Ireland	Trawl	"
24 VIII 61	1 ♀	500 f.l.; 612 t.l.	North Sound of Galway Bay, Ireland	Trawl	"
24 VIII 61	1 ♂	500 f.l.; 600 t.l.	North Sound of Galway Bay, Ireland	Trawl	"
24 VIII 61	1 ♂	485 f.l.; 592 t.l.	North Sound of Galway Bay, Ireland	Trawl	"
24 VIII 61	1 ♂	422 f.l.; 517 t.l.	North Sound of Galway Bay, Ireland	Trawl	"
24 VIII 61	1	466 f.l.; 555 t.l.	North Sound of Galway Bay, Ireland	Trawl	"
24 VIII 61	1	477 f.l.; 576 t.l.	North Sound of Galway Bay, Ireland	Trawl	"

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2 IX 53	1		Rose Garden, Iceland–Faroes Ridge	Comm. landings	Brandes, Kotthaus and Krefft, 1954: 44
8 IX 53	50–60		Vestmannaeyja, Iceland	Comm. landings	"
14 IX 53	3		Rose Garden, Iceland–Faroes Ridge	Comm. landings	"
28 IX 53	3		S.W. Iceland	Comm. landings	"
30 IX 53	6		Vestmannaeyja, Iceland	Comm. landings	"
1 IX 57	3	52–58	S.W. Iceland	Comm. trawler	Brandes and Kotthaus, 1959: 42
10 IX 57	2	55; 58	63°14′N., 24°50′W.	Comm. trawler	"
14 IX 57	2	56; 58	Gamelloch, N.W. Iceland	Comm. trawler	"
5 IX 52	1		Ingolfshöfdi, Iceland	Comm. landings	Brandes, Kotthaus and Krefft, 1953: 47
14 IX 52	1		Rose Garden, Iceland–Faroes Ridge	Comm. landings	"
15 IX 52	4		Ingolfshöfdi, Iceland	Comm. landings	"
16 IX 52	1		Ingolfshöfdi, Iceland	Comm. landings	"
18 IX 52	1		Berudeep, Iceland	Comm. landings	"

(Continued on next page)

TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
5 IX 54	1 ♀	62	63°07′N., 23°53′W.	Comm. landings	Brandes, Kotthaus and Krefft, 1956: 30
25 IX 56	1		Syderø Bank, Faroes	Longline	Rae and Wilson, 1958a: 54
13 IX 58	1	56	Rose Gardens, Iceland–Faroes Ridge	Comm. trawler	Brandes and Kotthaus, 1960: 72
6 IX 01	1	46.5 t.l.	Selvogur, S. coast of Iceland	Ashore after S.E. storm	Saemundsson, 1903: 46
6 IX 51	1		63°15′N., 20°05′W.	Comm. landing	Brandes, Kotthaus and Krefft, 1953: 47
8 IX 08	1	49 t.l.	Grindavik, S.W. coast Iceland	Stranded alive	Saemundsson, 1922: 180
IX 30	1	33.5 t.l.	Grindavik, S.W. coast Iceland	Stranded	Saemundsson, 1939: 191
2 IX 57	1 ♂	57.0	Faroe Bank	Longline	Rae and Lamont, 1959: 85; + details pers. comm.
19 IX 56	2 ♀	53.6	45′ N.N.W. of Butt of Lewis	Longline	Rae and Wilson, 1958b: 96; + details pers. comm.
IX 51	8 cwts		50′ W. × N. Barra Head	Longlines	Rae and Wilson, 1952a: 107
30 IX 50	1		28′ S.E. × E. of Aberdeen	Comm. trawler	Rae and Wilson, 1951: 83; + details, 1962, pers. comm.
IX 38	1		W. of Shetland	Caught by dogfish line	Willgohs, 1954: 4
24 IX 31	1		Kattegat, N. of Laesø	Caught	Jensen, 1940; citing Jägerskiöld, 1932: 39
10 IX 59	1 ♂	61	21′ N.W. × W. of Muckle Flugga, Shetland	Trawl	Rae and Lamont, 1961: 105; + details, 1962, pers. comm.
23 IX 59	2 ♀	60; 61	40′ N.W. of Sule Skerry	Trawl	"
12 IX 59	1		off Ronas Voe	Trawl	"
12 IX 54	1		10′ N. Muckle Flugga, Shetland	Trawl	Rae and Wilson, 1956b: 69
28 IX 54	1		Butt of Lewis	Longline	"
13 IX 59	1 ♀ 1 ♂	59 57	18–20′ W.N.W. of Flugga, Shetland	Trawl	Rae and Lamont, 1961: 105; + details, 1962, pers. comm.
11 IX 24	1		80′ S.W. × W. Barra Head		Rae and Lamont, 1962, pers. comm.
18 IX 25	1		Inverness Firth		"
22 IX 23	3	54; 53; 49	65′ W. ¾ S. of Barra Head	Longline	"
30 IX 25	1 ♂	58	47′ N.W. × N. ½ N. of Butt of Lewis	Longline	"
7 IX 26	1		50–60′ W.S.W. of Barra Head	Longline	"
29 IX 26	1		45′ N.W. ½ W. Barra Head		"
17 IX 28	1		25′ N.N.W. of Rona		"
9 IX 36	2 ♂	60.3; 56.5	50′ N.W. × N. Butt of Lewis	Longline	"
22 IX 36	1 ♂	58	12′ N.E. × N. Flugga, Shetland	Trawl	"
8 IX 37	4		30′ S.W. × W. of St. Kilda		"
22 IX 37	1		90′–100′ N.E. × N. Buchanness		"

12 IX 47	1	61	Basta Voe, Yell, Shetland	Stranded	"
23 IX 49	1		40′ N.N.E. of NorthRona	Longline	"
29 IX 49	1		45′ N.N.W. Butt of Lewis	Longline	"
25 IX 61	1	60.2	off Flugga	Trawl	"
ca. 29 IX 61	1	62	Shetland area	Longline	"
12–13 IX 23	7	55–65	80′ W.S.W. of Penmarch Point (N. of St. Nazaire)	Caught on tunny line	Legendre, 1924: 220–221
14 IX 23	6	46; 47; 50; 51; 2 × 52	about 50′ W. of Glenan Is. (off Concarneau)	Caught on tunny line	"
IX 51	1		Porcupine Bank (S.W. Ireland)	Commercial	A. C. Wheeler, 1961, pers. comm.
29 IX 52	1		Holbaek Fjord, Zealand, Denmark	(Stranded?)	Zoological Museum, Univ. of Copenhagen
20 IX 57	1	58.7 t.l.; 49.3 f.l.	3′ W. of Smerwick Harbour, Ireland	Mackerel nets	Went, 1958: 246
9 IX 33	1		off Scarborough, Yorks.	Taken in trawl net	Clarke, 1934: 24
IX 50	1	37	Porcupine Bank (off S.W. Ireland)	Captured	Brandes, 1952: 39
2 IX 61	1		Dingle Bay, Ireland	Trawl net	Went, 1962: 34
IX 09	1		Courtmassherry, Co. Cork, Ireland		Went, 1962, pers. comm.
15 IX 26	1		19′ N.W. × W. of Eagle Island, Ireland		Rae and Lamont, 1962, pers. comm.
			OCTOBER		
13 X 52	1	55.5	Iceland–Faroes Ridge	Commercial trawler	Krefft, 1961, pers. comm.
2 X 58	3	(1 = 51)	63°16′N., 25°30′W., S.W. Iceland–Mehlsaek	Trawler (315 m)	Krefft, 1960: 71; 1961, pers. comm.
13 X 58	2	54; 56	65°10′N., 25°W.	Comm. trawler	Brandes and Kotthaus, 1960: 72
1 X 53	1		Vestmannaeyja, Iceland	Comm. landings	Brandes, Kotthaus and Krefft, 1954: 45
15 X 53	1		10′ W. of Vestmannaeyja	Comm. landings	"
X 51	1	54.8 t.l.	about 42′ W.N.W. of Storholmen, Norway	Caught (about 290 m)	Willgohs, 1954: 4
ca. 1 X 61	2		Faroe Bank	Longline	Rae and Lamont, 1962, pers. comm.
29 X 52	1	56	10′ E.S.E. Aberdeen	Trawl	Rae and Wilson, 1953a: 147; 1953b: 138
31 X 52	1		12–15′ N.N.E. Flugga, Shetland	Trawl	"
X 55	1	51–63	58°N., 0°3′E.		Verwey, 1956: 96–97
X 20	1	60	Als, Østjylland, Denmark	Commercial (15 fm)	Jensen, 1940: 194, citing Dansk Fiskeritidende, 1920: 536
21 X 27	1	58 t.l.	Thisted, Denmark	Commercial; live caught in shallow water	Jensen, 1940: 194
8 X 27	1		Frederikshavn, Denmark	Net (10m)	"

(Continued on next page)

TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
14 X 27	1		near Fornaes Fyr, Denmark		"
20 X 27	1		Klitmøller, Denmark		"
27 X 27	1		Lokken Strand, Jammer Bugt, Denmark	Stranded after storm	"
31 X 27	1		Skagen Sønderstrand, Denmark	Stranded	Jensen, 1940: 195
17 X 29	1		Hansted, Denmark, near land		"
22 X 28	1		Torup Strand, Jammer Bugt, Denmark		Jensen, 1940: 195, citing Dansk Fiskeritidende, 1928: 524
17 X 36	1		Lild Strand, Denmark		Jensen, 1940: 196
13 X 37	1		Aebeltoft, Denmark		"
21 X 57	1	55	S.W. coast Norway	Comm. trawler	Brandes and Kotthaus, 1959: 42
4 X 58	1	58 (t.l.?)	Utsira, Norway		Holgersen, 1959: 128
26 X 53	1		N.N.W. Flugga, Shetland	Trawl (65 fm)	Rae and Wilson, 1954a: 178
28 X 27	1	59–61	Hunspoint, Queensferry, Firth of Forth	Caught	Stephen, 1928: 28
28 X 27	1	59–61	Firth of Forth	Caught	"
X 27	1	59–61	Firth of Forth	Caught	"
X 27	1	59–61	180′ E.N.E. Girdleness (the Patch)	Caught	"
X 51	1		80′ N.E. × N. Buchanness	Trawl	Rae and Wilson, 1952a: 107
13 X 52	1		20′ E. Flugga, Shetland	Trawl	Rae and Wilson, 1953a: 147; 1953b: 138
16 X 52	1 ♀	54	120′ N.E. × N. Buchanness	Trawl	"
16 X 52	2 ♀ ♂	58.5; 61	100′ N.E. Buchanness	Trawl	"
17 X 52	1 ♀	58.7	96–110′ N.E. ½ N. to E.N.E. Aberdeen	Trawl	"
21 X 52	1 ♀	52.8	15–20′ S.E. Fair Isle	Trawl	"
28 X 52	1 ♀	57.5	7′ E. Outer Skerries, Shetland	Trawl	"
6 X 59	1	58	off Fair I., Scotland		Rae and Lamont, 1961: 105; + details pers. comm.
26 X 56	1		Aberdeen Bay	Trawl	Rae and Wilson, 1958b: 96; + details pers. comm.
15 X 53	2		60′ N. Sule Skerry (off N.W. Scotland)	Longline	Rae and Wilson, 1954a: 178
X 51	5		40′ N.W. Butt of Lewis	Longline	Rae and Wilson, 1952a: 107; 1952b: 116
X 51	1		N.W. × N. Dennis Head, Orkney	Comm. landings (182 m)	"
3 X 53	6		45′ N.N.W. Butt of Lewis	Longline	Rae and Wilson, 1954a: 178
19 X 54	1		Muckle Flugga, Shetland	Trawl	Rae and Wilson, 1956b: 69
14 X 57	1		North Minch	Drift net	Rae and Lamont, 1959: 85; 1962, pers. comm.

15 X 57	1	58.4	off Kebock Head, Lewis	Drift net	"
14 X 55	1		Cape Wrath, Sutherland	Trawl	Rae and Wilson, 1957: 103; 1956a: 100
31 X 57	2	53.3	Joppa, Firth of Forth	Stranded	Rae and Lamont, 1959: 85; pers. comm.
13 X 58	1 ♀	56.2	5′ E.N.E. of Lossiemouth, Moray Firth	Seine net	Rae and Lamont, 1960: 78; pers. comm.
4 X 57	1 ♀	55.2	Aberdeen Bank	Trawl	Rae and Lamont, 1959: 85; pers. comm.
26 X 56	1		Bell Rock (off St. Andrews)	Trawl	Rae and Wilson, 1958b: 96; pers. comm.
X 27	1	58	Viking Bank (60°20′N., 2°40′E.)	Caught	Grimpe, 1929: 163, citing Ehrenbaum, 1928
18 X 27	2	56; 57	55°10′N., 0°55′E.	Caught (60–70 m)	"
24 X 1851	1 ♀	57.2	Gardenston Harbour, Gamrie, Banffshire	Swimming inshore at ebb tide—thrown ashore by fisherman with his hands	Harris, 1851: 3301–2
5 X 61	1 ♀	51.4 t.l.; 44 f.l.; 40.6 s.l.	55°35′N., 1°18′E.	Motorlugger–herring trawl	Krefft, 1961, pers. comm.
5 X 61	1 ♂	54.7 t.l.; 47.1 f.l.; 42.6 s.l.	55°35′N., 1°18′E.	Motorlugger–herring trawl	"
1 X 25	1		6′ S.S.E. of Copinsay, Orkney	Caught	Rae and Lamont, 1962, pers. comm.
9 X 25	1		46′ W. ½ S. of Barra Head, Lewis		"
4 X 26	1		18–20′ S.E. of Sumburgh Head, Shetland		Rae and Lamont, 1962, pers. comm.
10 X 27	1		26′ S.E. × E. of Sumburgh Head, Shetland		"
11 X 27	1		8′ S.S.E. of Sumburgh Head, Shetland		"
2 X 28	1		85′ S.W. × W. ½ W. of Barra Head, Lewis		"
9 X 28	1		Lousy Bank (S. end)		"
29 X 29	1		14′ S.W. of Fair Isle		"
13 X 29	2	65; 64	6′ S.E. of Buchanness		"
3 X 31	1		50′ E. of Outer Skerries, Shetland		"
18 X 31	1 ♂	62.5	Aberdeen Beach	Stranded	"
13 X 32	1		20′ W. ½ S. of St. Kilda	Longline	"
5 X 33	1		60–75′ E.S.E. of Aberdeen	Longline	"
29 X 34	1		7′ S.S.E. Sumburgh Head, Shetland		"
3 X 36	1		30′ N.N.E. of Buchanness		"
5 X 36	1		110′ S.W. × W. of Rockall		"
1 X 49	1 ♂	44	45′ N.N.W. of Butt of Lewis	Longline	"
16 X 49	1 ♀	60.5	Donroch Firth, Sutherland	Stranded	"
20 X 49	12		45′ N.W. × N. Butt of Lewis	Longline	"

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TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
22 X 49	2		90–95′ E.N.E.–N.E. × E. Aberdeen	Trawl	"
24 X 49	1 ♂	59	18′ N.N.W. Fair Isle	Trawl	"
18 X 60	1 ♀	60	45′ N.W. of Butt of Lewis	Longline	"
19 X 60	1 ♀	63.5	3′ S. of Golspie, Moray Firth	Probably stranded	"
29 X 60	1 ♀	60.2	Stonehaven Beach, Aberdeen	Stranded	"
ca. 1 X 61	1 ♀	58.2	off Flugga, Shetland	Trawl	"
3 X 61	1		off Sumburgh Head, Shetland	Stranded	"
9 X 61	2		The Reef (58°30′N., 3°E.)	Trawl	"
17 X 61	1 ♀	62.5	50′ N.W. of Sule Skerry	Longline	"
X 51	4 cwts.		N.W. Eagle I., W. Ireland	Longlines (200 m)	Rae and Wilson, 1952a: 107
X 51	3 cwts.		23′ W.N.W. Black Rock, W. Ireland	Longlines (182 m)	"
14 X 52	1	57	Hornbaek, Denmark		Nielsen, 1961, pers. comm., citing Danish press
7 X 56	1		Redcar, Yorks.	Found ashore dead	Wheeler, 1961, pers. comm.
24 X 45	1 ♀	59	50′ W.N.W. Heligoland	Cutter—comm.	Krefft, 1961, pers. comm.
27 X 48	1 ♀	59	55°28′N., 1°25′E.	Trawler (70 m)	"
27 X 48	1 ♂	54	55°28′N., 1°25′E.	Trawler (70 m)	"
12 X 49	1	61	Dogger Bank	Trawler	"
13 X 56	1 ♂	56	N.W. Reef, W. Dogger Bank	Cutter	"
X 1850	4	(1 = 58)	Redcar, Yorks.	Stranded on beach	Rudd, 1850: 2971
7 X 54	1		about 1′ S. of Bray Head, Valentia Is., Co. Kerry, Ireland	Trawling with mackerel spinners for baitfish; fell off line when being hauled in	Healy, 1955: 254
7 X 54	1	39.6 t.l.; 32 f.l.	about 1′ S. of Bray Head, Valentia Is., Co. Kerry, Ireland	Trawl—mackerel lines and spinners for bait	"
7 X 54	1	42.6 t.l.; 34.7 f.l.	about 1′ S. of Bray Head, Valentia Is., Co. Kerry, Ireland	Trawl—mackerel lines and spinners for bait	"
25 X 48	1	34.5 t.l.; 28 f.l.	Castletownsend Harbour, Co. Cork, Ireland	Motorboat	Gibson, 1949: 309
X–XI 1844	3		Redcar, Yorks.	Stranded	Rudd, 1845: 833
19 X 1895	61		near Scarborough, Yorks.	Caught	Clarke, 1895: 436; 1928: 109
29 X 1895	60		near Gt. Yarmouth, Norfolk	Taken in herringnets	Patterson, 1897: 548
6 X 1885	1	58 (extreme l.)	Redcar, Yorks.	Caught	Lofthouse, 1886: 640

30 X 27	1	(large spec.)	Scalby Ness, nr. Scarborough, Yorks.	Stranded (mutilated by rats and gulls)	Clarke, 1928: 107
7 X 56	1		Redcar, Yorks.	Stranded	Wheeler, 1961, pers. comm.
2 X 58	2	40; 43	Porcupine Bank off S.W. Ireland	Trawl	Rae and Lamont, 1960: 78; 1962, pers. comm.
31 X 27	1	61 (extreme l.)	Scarborough South Bay, Yorks.	Stranded alive	Clarke, 1928: 107–8
9 X 22	1	59.5	Whitby, Yorks.	Stranded	Clarke, 1928: 109, citing Snowden, pers. comm.
1 X 34	1	30.5	near Scarborough, Yorks.	Taken from stomach of a cod	Clarke, 1935: 44
12 X 1892	1	60 t.l.	Hunstanton Beach, Norfolk	Stranded alive after gale	Le Strange, 1894: 421–2
30 X 1885	1		off Palling, Norfolk	Live caught?	Lowe, 1894: 636
X 1843	1		Tramore, Co. Waterford, Ireland		Thompson, 1856: 92, cited by Went, 1962; pers. comm.
31 X 61	1	57 t.l.; 48.2 f.l.; 43.7 s.l.	Wyk, Insel Föhr (off W. Germany)	Drifting inshore in half-dead condition—thrown ashore by a boy with his hands	Krefft, 1962: 15–17; 1962, pers. comm.
4 X 23	1		32′ N. of Broad Haven, Co. Mayo, Ireland		Rae and Lamont, 1962, pers. comm.
6 X 24	1		45′ W. × S. Black Rock		"
12 X 25	3		20′ N.W. × W. of Eagle Island, Ireland		"
22 X 25	1		21′ N.W. × W. of Eagle Island, Ireland		"
22 X 25	1		80′ W. × N. of Tory Island, Ireland		"
4 X 26	3		20′ N.W. of Eagle Island, Ireland		"
5 X 26	1		18′ N.W. × W. of Eagle Island, Ireland		"
4 X 29	2 ♂	60; 62	20′ N.W. of Eagle Island, Ireland		"
28 X 47	1 ♀	58.5	N.W. of Eagle Is. to N. Rathlin	Longline	"
12 X 21	1	43 s.l.	Øresund, near Smidstrup, Denmark	Net (22 ft)	Jensen, 1940: 194
X 1896	1		Kolding Fjord, Denmark	Live caught	Otterstrøm, 1912: 106

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3 XI 1894	1	32 s.l.	Faroes		Zoological Museum, Univ. of Copenhagen
16 XI 29	1		Blokhus, Denmark	Cod nets (3–5 fm)	Jensen, 1940: 195
17 XI 29	1		Vigsø Bugt, Denmark, near land	Cod nets (5 fm)	Jensen, 1940: 196

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TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
XI 49	1	56.5	Northern North Sea	Comm. landings	Krefft, 1961, pers. comm.
5 XI 27	1	60 t.l.	Lønstrup, Denmark	Live caught	Zoological Museum, Univ. of Copenhagen
16 XI 55	1	44.5 s.l.	Ved Kyndbyhavn ilsedlfjorden, Denmark	Live caught in bottom net (4 m)	"
14 XI 41	1		Gilleleje, Denmark	Stranded	Nielsen, 1961, pers. comm., citing Danish press
30 XI 51	1	54	West side of Egholm W. Skelskør, Denmark	Pound net	Zoological Museum, Univ. of Copenhagen
4 XI 52			Esbjerghavn, Denmark	Stranded	Nielsen, 1961, pers. comm., citing Danish press
14 XI 49	1	61	57°50′N., 1°30′E.	Trawl	Krefft, 1961, pers. comm.
	1	59			
21 XI 49	1	44	Northern North Sea, Fladen ground	Trawl	"
22 XI 50	½ basket in 1 haul		Viking Bank at 60°N.	Trawl	"
4 XI 48	1	61	58°35′N., 2°10′E.	Caught (95 m)	Kristensen, 1950: 50
8 XI 48	1		from about same area as 58°N., 02′E.	Caught	"
16 XI 48	1	38.7	100′ S.W. of Rockall	Longline	Rae and Lamont, 1962, pers. comm.
3 XI 49	1	46.4	30′ E. of Fraserburgh	Seine net	"
9 XI 49	1		Queensferry, Firth of Forth	Stranded	"
11 XI 49	1	51	12′ N.E. of Bell Rock	Trawl	"
14 XI 49	2	43.8; 48.7	18′ N.N.W. of Flugga	Trawl	"
14 XI 49	2		N.W. of Flugga, Shetland	Trawl	"
14 XI 49	1 ♂	47	30′ N. of Flugga, Shetland	Trawl	"
14 XI 49	4		20′ N.N.W. of Ronasvoe, Shetland	Trawl	"
27 XI 49	1 ♀	57	180′ N.E. ¼ E. Buchanness	Trawl	"
28 XI 49			12′ E. of Sule Skerry	Trawl	"
29 XI 49	2		145′ N.E. × E. ½ E. of Buchanness	Trawl	"
9 XI 60	2 ♀	54.8; 53.8	Fair Isle–Foula	Trawl	"
20 XI 60	1	60	Rosemarkie Beach, Inverness Firth (Moray Firth)	Stranded	"
22 XI 60	1	57.2	Mid Minch	Drift net	"
25 XI 60	1 ♀	60.3	Aberdeen channel	Stranded	"
25 XI 60	1 ♀	60	4′ E. of Tarbat Ness, Moray Firth	Seine net	"
28 XI 60	1 ♂	55.5	Dornoch Beach, Dornoch Firth, Sutherland	Stranded	"

30 XI 60	1	55	5′ off St. Abbs Head, Berwick	Seine net	,,
30 XI 60	1 ♂	58	8′ E.N.E. of Lossiemouth, Moray Firth	Seine net	,,
ca. 10 XI 61	1 ♀	57.5	off Cape Wrath	Trawl	,,
13 XI 61	1 ♂	60.4	24′ S.S.E. of Aberdeen	Trawl	,,
26 XI 52	1 ♂	56.4	Burghead Bay, Moray Firth	Trawl	Rae and Wilson, 1953a: 147; 1953b: 138
29 XI 52	1		30–37′ E.S.E. Aberdeen	Trawl	,,
XI 55	1	51–63	58°20′N., 2°15′E.	Catch	Verwey, 1956: 96–7
XI 25	1		Hansted Fyr, Denmark	Commercial	Jensen, 1940: 194
24 XI 26	1		near Randers Fjord, Denmark		,,
1 XI 27	1	61 t.l.	Aalbaek, Denmark	Stranded alive	Jensen, 1940: 195
2 XI 27	1		Lønstrup, Denmark	Stranded	,,
3 XI 27	1		Tversted Forstrand, Denmark		,,
4 XI 27	1		near Hanstholm, Denmark	(10 m)	,,
6 XI 27	1		Odde, Mariager Fjord, 3 km. offshore, Denmark	Net (3 m)	,,
15 XI 27	1		Febbersted, Denmark	Stranded	,,
13 XI 27	1		Tisvildeleje, Denmark	Caught in very shallow water	,,
14 XI 27	1		½′ from Hansted, Denmark	Cod net	,,
15 XI 27	1		N. Vorupør, Denmark	Stranded	,,
18 XI 27	1		Hjembaek Strand, Djursland, Denmark		,,
XI 27	1		Skagerak, *ca.* 1,000 m from land (off Skagen)	Caught	,,
9 XI 29	1		Agger Tange, Denmark		,,
XI 1827	1		Skälderviken, Sweden		Nilsson, 1855: 124
15 XI 27	1 ♀	60	Sør-Froia, Trondelag, Norway	Live caught	Nordgård, 1928: 63–4; Bernhoft-Osa, 1935: 101
2 XI 53	1 ♂	57	30′ N.E. × N. Fraserburgh, Aberdeen	Trawl	Rae and Wilson, 1954a: 178
12 XI 53	1 ♂	56.5	5′ S.E. Sule Skerry; 59°N., 4°20′W.	Trawl	,,
11 XI 27	1	59–60	Aberlady, E. Lothian	Washed ashore	Stephen, 1928: 28
17 XI 27	1	59–60	Firth of Forth	Caught	,,
11 XI 27	2	59–60	220′ E.N.E. May Island	Caught	,,
30 XI 33	1	58	North Berwick Beach, East Lothian	Stranded	Stephen, 1934: 27
5 XI 52	2		14′ E.S.E. Sumburgh Head, Shetland	Trawl	Rae and Wilson, 1953a: 147; 1953b: 138
5 XI 52	2		110′ N.E. × N. Buchanness, Aberdeen	Trawl	,,
6 XI 52	1		Dunby Rock, Cruden Bay	Seine	,,
7 XI 52	1	59	off Montrose, Angus	Seine	,,
8 XI 52	1	54.6	N. of Peterhead, Aberdeen	Stranded	,,

(Continued on next page)

TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
8 XI 52	1	55	Whitehills, Moray Firth	Stranded	"
9 XI 52	1	57.2	Harbour of Refuge, Peterhead	Stranded	"
11 XI 52	1 ♂	54	45′ S. × E. Aberdeen	Trawl	"
13 XI 52	1 ♂	55.7	52′ S. × E. Aberdeen	Trawl	"
14 XI 52	1 ♀	57.5	14′ S.E. × E. Bell Rock	Trawl	"
14 XI 52	1 ♂	56.5	Old North Harbour, Peterhead	Stranded	"
18 XI 52	1		Granton Harbour, Firth of Forth	Stranded	"
18 XI 52	1 ♂	55	3′ N.E. Tolsta Head, Lewis	Drift net	"
20 XI 52	1 ♀	55.5	10′ N.N.W. Flugga, Shetland	Trawl	"
21 XI 52	1	54.6	Stronsay, Orkney	Stranded	"
21 XI 52	1 ♂	55.5	Fortrose, Ross, and Cromarty		"
25 XI 52	1 ♀	53.3	Burghead Harbour, Moray Firth	Stranded	"
XI 29	1		Lild Strand, Denmark	Caught	Jensen, 1940: 196
22 XI 11	1		16′ S.S.W. Fair Isle		Thompson, 1918: 63–64; + details, Rae and Lamont, 1962, pers. comm.
20 XI 12	1		5′ S.E. Collieston, Aberdeen		"
25 XI 12	1		5′ E. × N. ½ N. Aberdeen		"
29 XI 12	1		5′ E.N.E. Aberdeen		"
30 XI 12	1		7–8′ S.E. Buchanness		"
30 XI 12	1		S.E. Buchanness		"
3 XI 24	1		90′ N.E. × N. of Buchanness, Aberdeen		Rae and Lamont, 1962, pers. comm.
13 XI 24	1 ♂	60	off Burnmouth, Berwick		"
3 XI 27	1 ♂	58.5	St. Combs, Moray Firth	Stranded	"
14 XI 27	1 ♀	60	Montrose Basin, Angus		"
15 XI 27	1 ♂	56	Shandwick Bay, Moray Firth		"
17 XI 27	1 ♀	61	Aberdout, Firth of Forth		"
21 XI 27	1		St. Combs, Moray Firth	Stranded	"
25 XI 27	1		off Golspie, Moray Firth	Small line	"
30 XI 27	1 ♂	62	Cruden Bay, Aberdeen	Gaffed	"
22 XI 28	1		7–9′ S.S.E. of Buchanness		"
6 XI 29	1		35′ N.E. × E. Outskerries, Shetland		"
20 XI 34	1		195′ N.E. × E. Aberdeen		"
26 XI 34	1		25′ S.E. of Samburgh Head, Shetland		"
5 XI 35	1		140′ N.E. ½ E. Buchanness		"
2 XI 36	1		30′ N.E. × E. Buchanness		"

10 XI 36	1		30′ E.N.E. Aberdeen		"
11 XI 36	1		14′ S.E. × E. Noss Head, Caithness		"
11 XI 36	1		14′ E.S.E. Noss Head, Caithness		"
26 XI 36	1 ♂	60	5′ E. ½ N. of Bass Rock, Firth of Forth	Trawl	"
4 XI 37	1 ♀		Bervie Bay, Kincardine	Stranded	"
19 XI 37	1		18′ E.S.E. Sumburgh Head, Shetland		"
25 XI 38	1 ♀	59	Freswick, Caithness	Stranded	"
29 XI 58	1		Mar Bank, off E. Scotland	Trawl	Rae and Lamont, 1960: 78
10 XI 55	1	55	30′ N.N.E. Fraserburgh, Aberdeen	Trawl	Rae and Wilson, 1956a: 100
25 XI 1825	1	60.7 t.l.	Landskrona, Hildesborg, Sweden	Stranded after N.W. storm	Smitt *et al.*, 1893: 79; Schagerström, 1827: 207
5 XI 55	1 ♂	52.5 t.l.	15–18′ E. Rattray Head, Aberdeen	Trawl	Rae and Wilson, 1956a: 100; 1957: 103
10 XI 55	1 ♂	55.0 t.l.	30′ N.N.E. of Fraserburgh, Aberdeen	Trawl	Rae and Wilson, 1956a: 100; 1962, pers. comm.
12 XI 55	1 ♀	52 t.l.	Basta Voe, N. Yell, Shetland	Stranded	Rae and Wilson, 1956a: 100; 1957: 103
21 XI 55	1 ♀	55.3 t.l.	Hatson Beach, Orkney	Stranded (seen to "rush itself ashore")	"
22 XI 55	1	58.4 t.l.	Buchan Deeps	Trawl	"
26 XI 55	1		near Bell Rock, Inchcape	Trawl	"
28 XI 55	1 ♀	53 t.l.	4′ off Covesea, Moray Firth	Seine	"
3 XI 53	1 ♂	47.5	St. Kilda	Trawl	Rae and Wilson, 1954b: 117; 1954a: 178
XI 51	1	53	14′ N.W. Flugga, Shetland	Trawl	Rae and Wilson, 1952a: 107; 1952b: 116
XI 51	1		16′ S.S.E. Todhead, Kincardine	Trawl	Rae and Wilson, 1952b: 116
9 XI 57	1 ♂	58.5	20′ N.N.E. Fraserburgh, Aberdeen	Seine net	Rae and Lamont, 1959: 85; 1962, pers. comm.
3 XI 56	1	40	North Sea (58°66′N., 3°27′E.)	Caught	Kotthaus, 1958: 96
30 XI 57	1	52.1	8′ S. of Todhead (Kincardine)	Trawl	Rae and Lamont, 1959: 85; 1962, pers. comm.
25 XI 57	1		Newburgh, Aberdeen	Stranded	"
7 XI 56	1 ♀	62	9′ E. ½ N. Rattray Head, Aberdeen	Trawl	Rae and Wilson, 1958b: 96; 1962, pers. comm.
7 XI 56	1		9′ E. ½ N. Rattray Head, Aberdeen	Trawl	"
12 XI 57	1	54	200″ E.S.E. Aberdeen	Trawl	Rae and Lamont, 1959: 85; 1962, pers. comm.
14 XI 53	1		Portobello, Firth of Forth	Stranded	Rae and Wilson, 1954b: 117; 1954a: 178
14 XI 56	1	56.6	Montrose Bay, Aberdeen	Cod net	Rae and Wilson, 1958b: 96; 1962, pers. comm.
XI 56	1		Tain, Moray Firth	Stranded	"

(Continued on next page)

TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
XI 17	1		Ardmore, Co. Waterford, Ireland	Washed ashore	Went, 1962, pers. comm.
XI 09	1		Loughal, Ireland	Washed ashore alive	"
9 XI 1895	1		Between Whitby and East Row, Yorks.	Stranded on beach	Stephenson, 1896: 239
14 XI 1893	1		Whitby, Yorks.	Washed up on the sands	Stephenson, 1894: 211
3 XI 27	1		Scarborough South Bay, Yorks.	Washed ashore dead	Clarke, 1928: 108
5 XI 27	1	62	Scarborough Harbour, Yorks.	Stranded alive	"
7 XI 27	1	62	Scarborough Harbour, Yorks.	Stranded alive	"
7 XI 27	1		Scarborough, Yorks.	Taken on the sands	"
12 XI 27	1	59	Scarborough, Yorks.	Stranded alive	"
16 XI 27	1		Scarborough South Sands	Washed ashore—dead and decomposed	"
16 XI 27	1	58.4	near Bathing Pool, Scarborough, Yorks.	Stranded alive	"
17 XI 27	1	60.4	Carnelian Bay, 2′ S. of Scarborough, Yorks.	Stranded alive	"
24 XI 27	1		Scarborough South Bay, Yorks.	Washed ashore dead	"
28 XI 27	1	57.2	Scarborough South Sands, Yorks.	Washed ashore dead, but quite fresh	"
4 XI 27	2		Filey, Yorks.	Stranded	"
9 XI 27	1		Filey, Yorks.	Stranded	"
6 XI 27	1		Upgang, near Whitby, Yorks.	Stranded	"
16 XI 27	1		Whitby, Yorks.	Stranded	"
XI 27	1		Runswick, Yorks.	Stranded	"
29 XI 21	1		Whitby, Yorks.	Captured in shallow water on the sands	Clarke, 1928: 109, citing Snowden, pers. comm.
17 XI 25	1	46	Filey, Yorks.	Caught on a fisherman's hook baited with a Dahlia anemone	Clarke, 1928: 109
4 XI 27	1	58.4	Withernsea, Yorks.	Washed up on the shore	Sheppard, 1928: 25
XI 24	1	66	South Sands, Bridlington, Yorks.	Washed ashore alive	Sheppard, 1925: 53–4
XI 1799	1	41	In the inlet that runs up to Kingsbridge, S. coast of Devon	Taken alive—left by the tide	Montagu, 1804: 293
XI 55	2	51–63	Zeeland, Holland	Catch	Verwey, 1956: 96–97
XI 55	1	51–63	54°25′N., 2°25′E.	Catch	"
XI 52	3	51–60	Texel Hole oyster grounds, Holland	Catch	Verwey, 1953: 346–7
XI 52	6	51–60	Dutch coast, near Haarlem, Holland	Stranded	"
XI 57	1	56	Wijk aan Zee, Holland	Stranded	Verwey, 1960a: 548–9

XI 58	1 ♀	53	Callantsoog, Holland	Stranded	Verwey, 1960b: 564–5
13 XI 22	1	46 s.l.	Northeast coast of Romsø, Denmark	Stranded	Jensen, 1940: 194
XI 22	1		Svenborg Sund, Denmark	Cod trap	Jensen, 1940: 194, citing Dansk Fiskeritidende, 1922: 480
12 XI 1806	1	84	Swansea Bay, Wales		Turton, 1807: 98
25 XI 60	1	58.5	Thorpness, Suffolk	Alive on shore	Wheeler, 1961, pers. comm., citing "Angling Times," 25 XI 60
2 XI 50	1 ♂	56.5	Dogger Bank	Trawl	Krefft, 1961, pers. comm.
15 XI 48	1	39.4 t.l.; 29.8 f.l.	5′ S. of Slea Head, Co. Kerry, Ireland	Drift-net fishing for mackerel	Gibson, 1949: 309
10 XI 1850	1		Redcar, Yorks.	Stranded	Rudd, 1851: 3010
13 XI 1890	1		Mount's Bay near Penzance, Cornwall	Caught with hook and line	Cornish, 1891: 35
23 XI 1894	1	64	Caister, Norfolk	Toppled ashore during heavy wind	Patterson, 1897: 548
9 XI 1821	1	"full-sized"	Cromer beach, Norfolk	Found after a storm	Gurney, J. H., 1874: 19, citing Anna Gurney, 1821, MSS
XI 27	5		Norfolk coast, around Cromer	Caught	Grimpe, 1929: 163, citing Ehrenbaum, 1928: 709

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3 XII 51	1		Berudeep, Iceland	Comm. landings	Brandes, Kotthaus and Krefft, 1953: 47
26 XII 15	1	64 t.l.	S. coast Iceland, off Snaefellsnes	Caught living (trawl?)	Saemundsson, 1922: 180
21 XII 50	1	50 t.l.	West-Tampen, Norway	Caught by porbeagle line (180 m)	Willgohs, 1954: 4
27 XII 55	1	53.3	Crail, Fife	Stranded	Rae and Wilson, 1956a: 100
XII 51	2		near Kirkaldy, Firth of Forth	Stranded	Rae and Wilson, 1952a: 107
XII 51	1		North Berwick, Firth of Forth	Stranded	"
1 XII 52	1		3′ S. Golspie, Moray Firth	Stranded	Rae and Wilson, 1953a: 147; 1953b: 138
3 XII 52	1		off Montrose, Angus	Seine	"
6 XII 52	1		12′ S.E. Aberdeen	Trawl	"
9 XII 52	1 ♀	58	15′ N.E. Longstone (S.E. Scotland)	Trawl	"
XII 52	4		Whitley Bay, Yorks.	Washed ashore	Rae and Wilson, 1953a: 147, citing "Fishing News," 1952: 147
13 XII 51	1	54	Herdla, Hordaland, Norway	Drifting half-dead at the surface	Willgohs, 1954: 4
XII 51	1		Hvaler, Østfjord, Norway	Half-dead on shore	"

(Continued on next page)

TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
13 XII 21	1		near Hurup, Østjylland, Denmark	Net caught	Jensen, 1940: 194, citing Dansk Fiskeritidende, 1921: 508
4 XII 52	4	49; 3 × 52.5	50 km. W. of Shetland	"Fishing-line"	Willgohs, 1954: 4
10 XII 57	1 ♂	60	180′ E.N.E. Aberdeen	Trawl	Rae and Lamont, 1959: 85; 1961, pers. comm.
11 XII 57	1	50.8	Macduff, Moray Firth	Stranded	"
12 XII 57	1		off Johnshaven, Moray Firth	Stranded	"
16 XII 57	1	54.6	off Johnshaven, Moray Firth	Cod net	"
1 XII 55	2 ♀	56.5	Granton Harbour, Firth of Forth	Gaffed	Rae and Wilson, 1956a: 100; 1957: 103
4 XII 55	3		Portobello, Firth of Forth	Stranded	"
21 XII 55	1	50.8	26′ E.S.E. Aberdeen	Trawl	"
XII 51	1		47′ ½ E. Aberdeen	Trawl	Rae and Wilson, 1952b: 116; 1952a: 107
XII 51	2		135′ N.E. × E. ½ E. from Aberdeen	Trawl	"
6 XII 56	1		Inverness Firth (Moray Firth)	Drift net	Rae and Wilson, 1958b: 96; pers. comm.
29 XII 54	1 ♀	56.4	Gardenstown, Moray Firth	Stranded	Rae and Wilson, 1956b: 69
5 XII 56	1 ♀	52.5	8′ E. × N. of Rattray Head	Trawl	Rae and Wilson, 1958b: 96; pers. comm.
1 XII 58	1	52.0	Loch Carron, W. Ross.		Rae and Lamont, 1960: 78
16 XII 1843	1	47.2 f.l.	Tjörn, Göteborg (Bohuslän), Sweden	Cast up after N.W. storm	Smitt *et al.*, 1893: 79
28 XII 27	1	57 t.l.	Sandnesfjord, Rogaland, Norway	Live caught—net (30 fm)	Schaanning, 1929: 1; Bernhoft-Osa, 1935: 101
XI–XII 1850	several		Firth of Forth, near Edinburgh	Washed ashore	Logan, 1851: 3058
22 XII 53	1 ♀	55	24′ S.S.E. Aberdeen	Trawl	Rae and Wilson, 1954b: 117; 1954a: 178
5 XII 28	1		As Vig, S. Horsensfjord, Denmark	Stranded	Jensen, 1940: 195
6 XII 34	1		Aalsgaarde, Denmark	Stranded alive	Jensen, 1940: citing Aage Jensen, 1937: 16
3 XII 1876	1	44 s.l.	Skagen, Denmark		J. Nielsen, 1961, pers. comm.
3 XII 51	1		Uggerby, N. Jutland, Denmark	Stranded after storm	"
5 XII 51	2	40; 25	Lonstrup, Denmark	Stranded after storm	Nielsen, 1961, pers. comm., citing Danish press
5 XII 51	several		Hirtshalls, Denmark	Stranded	"
6 XII 51	1	50	near Liseleje, Denmark	Stranded	"
5 XII 51	1		Skälderviken, Denmark		"
XII 52	1		Rørvig (W. Lyngkroen), Denmark	Stranded	"
11 XII 58	1		Kirkholmbugten by Juelsminde, Denmark	Shot by a hunter	"

19 XII 49	1	45	Kattegat; N. entrance of Øresund	Cutter	Krefft, 1961, pers. comm.
25 XII 51	1		7′ N.E. Fehmarn, Baltic		Krefft, 1961, pers. comm., citing German press
6 XII 51	1		near Hundested, Denmark	Stranded	Nielsen, 1961, pers. comm., citing Danish press
XII 51	1	57	Sassnitz, Rügen, Baltic		Krefft, 1961, pers. comm.
16 XII 27	1	61	Jubilee Bank, S. Skagerak	Caught (24–34 m)	Grimpe, 1929: 163
7 XII 27	1		Vikhög—coast of Schonens, W. Øresund, Sweden	Caught	,,
1 XII 25	1		180′ E.N.E. Aberdeen		Rae and Lamont, 1962; pers. comm.
1 XII 56	1	52	Montrose Bay, Angus	Cod net	Rae and Wilson, 1958b: 96; pers. comm.
7 XII 56	1 ♂	57	Bell Rock	Trawl	,,
8 XII 56	2		Buddon Ness, Angus	Stranded	,,
11 XII 50	1		Eday, Orkney	Stranded	Rae and Wilson, 1951: 83; pers. comm.
12 XII 27	2		vicinity of Cromarty, Moray Firth	Stranded	Rae and Lamont, 1962, pers. comm.
13 XII 27	2		St. Combs, Moray Firth	Stranded	,,
20 XII 27	1		vicinity of Balintore, Moray Firth	Stranded	,,
7 XII 36	1		20′ S.E. × S. of Bard Head, Shetland		,,
2 XII 38	1 ♀	57	Aberdeen Harbour		,,
8 XII 38	1		40–55′ E.N.E. of Aberdeen		,,
9 XII 49	1		5′ S.E. Red Head, Angus	Trawl	,,
20 XII 49	1		near Dunbar, E. Lothian	Stranded	,,
12 XII 08	1		16′ N. × E. Rattray Head, Aberdeen		Thompson, 1918: 63–64; + details, Rae and Lamont, 1962, pers. comm.
17 XII 08	1		160′ N.E. ½ E. from Buchanness, Aberdeen		,,
3 XII 09	2		180′ E. × S. Aberdeen		,,
20 XII 09	1		175′–180′ E. × N. ¾ N., Aberdeen		,,
8 XII 10	3		4′ E. × N. Aberdeen		,,
16 XII 10	1		5′ E.S.E. Tod Head, Kincardine		,,
31 XII 10	1		5′ E.N.E. Aberdeen		,,
29 XII 11	1		45′ N. × W. Rattray Head, Aberdeen		,,
3 XII 12			7′ E.S.E. Buchanness, Aberdeen		,,
10 XII 49	1 ♀	57	Texel, Holland	Stranded alive	Kristensen, 1950: 50
27 XII 49	1		Terschelling, Holland	Stranded	,,
29 XII 49	1	53	Terschelling, Holland	Stranded	,,
29 XII 49	1	40	near Bloemendaal, Holland	Stranded	,,
29 XII 49	1 ♂	58	near Egmond, Holland	Stranded alive	,,
2 XII 27	1	58.5	Scarborough, Yorks.	Stranded	Clarke, 1928: 108

(Continued on next page)

TABLE 2. *Continued*

DATE	NO. (AND SEX)	LENGTH (CMS)	LOCALITY	CIRCUMSTANCES	AUTHORITY AND REMARKS
4 XII 27	1	57.2	Scarborough South Bay, Yorks.	Washed ashore dead and decomposed	"
10 XII 27	1	48.3	Scalby Ness, 2′ S. of Scarborough, Yorks.	Washed ashore dead and decomposed	"
2 XII 27	1	62.2	Filey, near Scarborough, Yorks.	Stranded	"
XII 49	1		Whitby, Yorks.	Stranded	Rae and Wilson, 1951: 83, citing "Fishing News" of 10 Dec., 1949
20 XII 59	1 ♂	57	Farne Is., Northumberland	Stranded	Rae and Lamont, 1961: 105; pers. comm.
XII 1850	1		Lowestoft, Suffolk	Washed ashore	Gurney, 1851: 3058
XII 55	1	51–63	Zandvoort, Holland		Verwey, 1956: 96–7
XII 55	1	51–63	Zeeland, Holland		"
XII 55	1	51–63	Huisduinen, Holland		"
XII 52	3	51–60	Texel Hole oyster grounds, Holland	Catch	Verwey, 1953: 346–7
XII 52	7	51–60	Dutch coast, near Haarlem	Stranded	"
XII 56	3	50; 2 × 45	between Katwijk and Texel, Holland	Stranded	Verwey, 1958: 542–3
XII 56	1	53	off Callantsoog, Holland	Catch (9 m)	"
XII 57	2	56	Egmond, Holland	Stranded	Verwey, 1960a: 548–9
7 XII 27	1		Spodsbjerg Light	(1 ft)	Jensen, 1940: 195
28 XII 27	1	"About the usual size"	Whitby, Yorks.	Stranded	Clarke, 1928: 108
2 XII 22	1	58.5	Whitby, Yorks.	Stranded	Clarke, 1928: 109, citing Snowden, pers. comm.
XII 25	1		Filey, Yorks.	Caught with a line baited with a Dahlia Wartlet anemone	Stevenson, 1926: 26
NO SEASONAL INFORMATION					
Nov./Dec. 1925	several		Bohuslän, Sweden		
			The Skaw, Denmark	Stranded	Jensen, 1937: 16
1830	1		Kullen, Sweden (56°18′N., 12°28′E.)		Nilsson, 1855: 124
1850	1		Bohuslän, Sweden		"
before 1850	1	44.1 t.l.	vicinity of Bergen		Collett, 1902: 44

1825	1		Gardenston Harbour, Gamrie, Banffshire	Left in hollow in rocks by the tide—behind the present (*i.e.* 1851) quay	Harris, 1851: 3302
1924	1		Skrea, Hallands Väderö I., Sweden	Live caught (trawl)	Goode, 1884: 335
?	1	54 t.l.	Skovshoved (on the Sound, *ca.* 10′ N. Copenhagen)	Live caught	Nielsen, 1961, pers. comm.
1851–52 (winter)	4		Redcar, Yorks.	Stranded	Rudd, 1852: 3504
1880	1		Grand Bank, Newfoundland	Live caught (trawl)	Goode, 1884: 335
1888 (prob. Aug.)	1		S. coast of Ireland		Went, 1962, pers. comm.
Nov./Dec. 1925	several		Øresund, Denmark	Stranded	Jensen, 1937: 16